Innovation Management and Sustainability for Competition: A Literature Review

Halil Savaş
Pamukkale University, Faculty of Economics and Administrative Sciences, Department of Business, Denizli, Turkey

Abstract

Achieving a competitive advantage through operations management, there are three strategies: differentiation, cost and response. Competitive advantage implies the creation of a system that has a unique advantage over competitors. The idea is to create customer value in an efficient and sustainable way. This requires application of these competitive advantage strategies in an effective way and these strategies must be related with innovation, innovation management and its sustainability for competition. In this study, innovation, innovation management and its sustainability have been reviewed in the context of differentiation, cost and response strategies by using a literature review.

Key words: Innovation, Innovation Management, Sustainability, Competitive Strategies

1. Introduction

In today's global and dynamic competitive environment requires a successful implementation of competitive strategies in a sustainable way. Differentiation, cost, and response as competitive strategies provide an opportunity for operations managers to achieve competitive advantage. Competitive advantage implies the creation of a system that has a unique advantage over competitors [1]. To provide and sustain this competitive advantage, business enterprises should consider competitive strategies with innovation. Innovation has always been at the centerpiece of competitiveness [2] and is a crucial mean to create competitive advantage and superior customer value [3]. A business which is serious about competing in fast changing markets with fast changing technology must make things happen – it must innovate [4] its products, services, processes or management practices.

Alegre, Lapiedra & Chiva (2006) states that product innovation is becoming more and more relevant, mainly as a result of three major trends: intense international competition, fragmented and demanding markets, and diverse and rapidly changing technologies. With the major trends, a firm that offer products that are adapted to the needs and wants of target customers and that market them faster and more efficiently than their competitors are in a better position to create a sustainable competitive advantage [5].

Tipu (2011) presents the classification of academic publications on innovation management in banks. In this study, as a main focus of each article, categories include process of innovation, factors affecting innovation, types of innovation, measures of innovation, and protection of innovation. The study reveals that there is an increase in the number of articles published within the categories of process of innovation and factors affecting innovation [6].

*Corresponding author: Address: Faculty of Economics and Administrative Sciences, Department of Business, Pamukkale University, 20070, Denizli TURKEY. E-mail address: hsavas@pamukkale.edu.tr, Phone: +902582962700 Fax: +902582962626

Alvano and Hidalgo (2012) study innovation management techniques and development degree of innovation process in service organizations. Service markets are becoming global, open and competitive. Knowledge is more available, technology more complex and service life-cycles are shortening. In order to satisfy this challenge, more innovation management tools are required to get better and more successful new or improved products and services [7].

Some researchers draw attention to the significance and reasons of innovation. Valmohammadi (2012) considers innovation as a key in achieving sustainable competitive advantages and, by extension, for the success of businesses in the market. The main reason is that innovative firms are more flexible and have a greater capacity to adapt to changes. This means that they can protect themselves when the climate is unstable, they can respond faster to changes, create new opportunities and exploit existing ones to a greater extent than the competition [8]. Innovation is recognized to play a central role in creating value and sustaining competitive advantage. It is widely considered as the life blood of corporate survival and growth. A great product can be one important element in the formula for business success, but companies that want to succeed in today's competitive environment need much more, they need innovation at every point of the compass, in all aspects of the business and among every team member. Building an environment fully engaged in positive change, and a culture rich in creativity and renewal, means creating a company with 360 degrees of innovation [9].

2. A Literature Review

Recently, there has been a great deal of academic and practitioner interest in the concept of creativity and innovation in organizations. This focus is not surprising, as innovation has been touted as the differentiator that will lead to the next level of competitive advantage [10]. In this section, we issue competitive strategies, main definitions of innovation, types of innovation, shortly innovation challenges and failures, and innovation management and sustainability.

2.1. Competitive strategies

Achieving competitive advantage through operations management, there are three strategies: differentiation, cost, and response. In practice, differentiation, low cost, and response can increase productivity and generate a sustainable competitive advantage. These strategies with ten operations management decisions are given in Figure 1 [11].

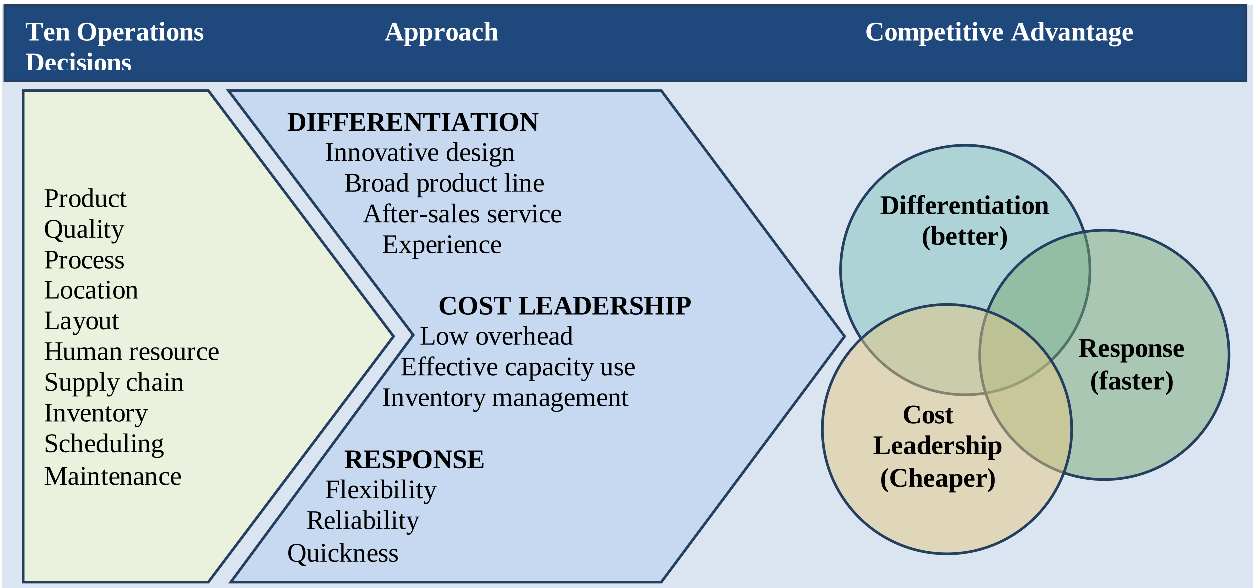

Figure 1. Achieving Competitive Through Operations

When outlining the idea of generic competitive strategies, Porter (1980) holds that cost leadership and differentiation signify two fundamentally different approaches to achieve competitive advantage. Cost leadership strategy seeks to achieve above-average returns over competitors through low prices by driving all components of activities towards reducing costs. To attain such a relative cost advantage, firms will put considerable effort in controlling and production costs, increasing their capacity utilization, controlling materials supply or product distribution, and minimizing other costs, including R&D and advertising [12]. The low-cost leadership entails achieving maximum value as defined by customer. It requires examining each of the 10 OM decisions in a relentless effort to drive down costs while meeting customer expectations of value. A low-cost strategy does not imply low value or low quality [13].

Differentiation strategy aims to build up competitive advantage by offering unique products which are characterized by valuable features, such as quality, innovation, and customer service. Differentiation can be based on the product itself, the delivery system, and a broad range of other factors. With these differentiation features, firms provide additional values to customers which will reward them with a premium price [14]. A differentiation strategy is an integrated set of actions taken to produce goods or services and it must be at acceptable cost. In addition, there is a significant and positive relationship between differentiation and market share [15].

The third competitive strategy option is response. Response is often thought of as flexible response, but it also refers to reliable and quick response. Indeed, we define response as including the entire range of values related to timely product development and delivery, as well as reliable scheduling and flexible performance. Flexible response may be thought of as the ability to match changes in a marketplace where design innovations and volumes fluctuate substantially [16]. The second aspect of response is the reliability of scheduling. Consequently, the competitive advantage generated through reliable response has value to the end customer. The third aspect of response is quickness [17].

2.2. Innovation defined

A research about innovation literature covers different innovation definitions from different viewpoints. These viewpoints are changing from narrower definitions to broad definitions. Lyons, Chatman & Joyce (2007) defines innovation broadly as the combination of *creativity and implementation.* Thus, they focus on both the production of *novel* and *useful* ideas that improve effectiveness as well as the methods used to put the creative ideas into practice. In the context of this definition, innovation can include doing old things in new ways rather than developing completely new inventions [18].

Baer (2012) takes care of *individuality of innovation*. Individual innovation refers to the "development and implementation of new ideas by people who over time engage with others within an institutional context". Creativity can be viewed as the first stage of an innovation process. Creativity refers to the development of ideas that are both novel and useful, either in the short or the long term whereas idea implementation describes the process of converting these ideas into new and improved products, services, or ways of doing things. But, “ideas are useless unless used” [19].

Alvano and Hidalgo (2012) defines innovation from a *technological perspective*. For them, technological innovation is defined as ‘all technical, industrial and commercial stages leading to successful launch of new products and services into the market or the commercial utilization of new technical processes’. The Oslo Manual (OECD, 2005) proposes the following definition: ‘an innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations’. This definition covers a wide range of different types of innovation compared with the previous definition of the manual that focused solely on technological innovation [20].

According to Dobni (2008), innovation is more than *just behaviors and activities*. A meta-analysis of the literature by Damanpour in 1991 would suggest that a broader conceptualization of innovation is required. That study considered the relationship between organizational innovation and 13 of its potential determinants. He uncovered statistically significant associations for nine of the determinants, some of which included specialization, functional differentiation, managerial attitude toward change, technical knowledge resources, and external and internal communication [21].

Birkinshaw (2008) defines innovation from *management perspective*. To him, management innovation is the invention and implementation of a management practice, process, structure, or technique that is new to the state of the art and is intended to further organizational goals. Adopting an intraorganizational evolutionary perspective, he examines the roles of key change agents inside and outside the organization in driving and shaping four processes—motivation, invention, implementation, and theorization and labeling—that collectively define a model of how management innovation comes about [22].

Innovation has some determinants, including leadership, cohesiveness, organizational size and structure, and resource availability. Cultural norms can be a powerful means of stimulating innovation by attaching social approval to activities that facilitate innovation. Culture can be defined as a system of shared values that define what is important and norms that define appropriate attitudes and behaviors for organizational members [23].

Cozijnsen, Vrakking and IJzerloo (2000), a thorough analysis of the major studies shows that they can all be classified in one of five different perspectives. Each of these perspectives defines successful innovation differently. Based on their definition of successful innovation, each perspective has developed different evaluation criteria. This means that for each perspective a different measure of success has been developed to decide whether or not an innovation has been successful. Various causes of unsuccessful of innovations are [24]:

- Most of the studies concentrate on only a part of the innovation process. It is frequently not very clear to what part of the process the study is limited.
- The theoretical basis of the studies depends in part on the particular section of the innovation process a study focuses on. Many studies do not describe their theoretical context.
- The way in which studies evaluate and operationalize successful innovation varies widely, or is hardly touched upon. The different measures for successful innovation do not make it any easier to generalize the different studies.
- The studies lack clear indications of the types of innovations investigated. In all likelihood a simple technical innovation is based on different success factors rather than a complex organizational innovation.

As a summary of these definitions and explanations, although there are many specific definitions of innovation, a central theme prevails that describes innovation as something new or unique. An invention is the common result of the innovation process. Innovation begins with a new idea and ends with a marketable product or service. Yet, in reality, innovation is more than new ideas; it is new technology, new ways of operating, and new paradigms of management [25].

2.3. Types of innovation

In his studies, Schumpeter discusses how economic development is driven by innovation, through dynamic processes of 'creative destruction' in which new technologies replace existing ones. Under this view, Schumpeter proposed the following forms of innovation: (1) introduction of new goods; (2) introduction of new forms of production; (3) discovery of a new source of raw materials or semi elaborated products; (4) opening of a new market; and (5) creating new market structures in an industry [26].

Innovations can be classified according to different criteria. The most extended ones are the radicalness of the innovation and the dual-core model. According to their radicalness, innovations can be broadly classified as radical when they produce fundamental changes in the activities of the organization and represent a clear departure from existing practices, or as incremental, when they result in a lesser degree of departure. According to the dual-core model, it distinguishes between technical and administrative innovations. Whereas technical innovations include new technologies, product and services, administrative ones refer to new procedures, policies and organizational forms. Organizational innovation is recognized as a source of competitive advantage and, by extension, as a source of success for the business [27].

According to innovation experts, such as James Higgins and Paul Plsek, there are basically four types of innovation strategies that organizations need to be concerned about: product, process, marketing, and management innovations. These four “types” are coupled with some forty characteristics that an organization’s culture needs to possess to achieve strategic competitive advantage through innovation and adaptive learning [28]. Four types of innovation are explained:

Product innovation is concerned with the organization’s new product or services, along with enhancements to existing ones [29]. Product innovation is a process that includes the technical design, R&D, manufacturing, management and commercial activities involved in the marketing of a new (or improved) product [30]. Product innovation, as defined by the OECD, is ‘a product innovation is the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses. This includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics.’ The first thing to note is that goods and services are both defined as products. Secondly, the products have to be new in that they have novel characteristics or novel combinations of characteristics that are not currently available on the market in a similar product. If a product already exists but is put to a new use not previously recognized, it is also considered a product innovation. It can also solve a previously unrecognized problem or a problem that was previously believed to be unsolvable [31]. Product innovation provides the most obvious means for generating revenues. Improved and radically changed products are regarded as particularly important for long term business growth. The power of product innovation in helping companies retain and grow competitive position is indisputable. Products have to be updated and completely renewed for retaining strong market presence [32].

Process innovation refers to the changes to organizational operations and production; this is also usually initiated by technological advancements. Process innovation means changes in the way in which things (products/services) are created and delivered [33]. Process innovation is defined by OECD as ‘the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software. The implementation of a new or significantly improved production method involves the development of a new way to produce a product using a newly developed machine, a new method, or the use of new software like 3D modeling software as part of the process or for developing new products. The delivery methods are associated with the physical movement of the product from the factory floor to the end user, i.e. the logistics of the company. This includes any system that is implemented in improving the delivery of the product to the customer such as computer systems, tracking systems and any associated equipment [34]. Process innovation embraces quality function deployment and business process reengineering [35].

Marketing innovation is concerned with improving the mix of target markets and how chosen markets are best served. Its purpose is to identify better (new) potential markets; and better (new) ways to serve target markets [1]. Marketing innovation is related to the marketing functions of promotion, price, distribution, and product-related packaging. Marketing innovation helps achieve relative differentiation and relative low-cost objectives by improving strategies and tactics concerned with the marketing mix [36].

Management innovation is concerned with the organization's structure, "authority relations, communication systems, or formal reward systems" [37]. In definition of innovation by OECD, the implementation of a new organizational method in the firm's business practices comprises new methods or procedures used in carrying out everyday business activities such as lean production and the first time introduction of a particular quality management system. Management innovation improves the way the organization is managed. It can help achieve both *differentiation and low-cost competitive* advantage by improving the efficiency and effectiveness of logistical efforts to achieve corporate goals [38].

If organizations want to survive they need to invest in different types of innovation, since different types of innovation influence organizations in different ways and achieve different outcomes and impacts. Although there are five categories of innovation for Schumpeter's classification system, most of the literature has focused on the first two areas of innovation, *product* and *process innovations*. Understanding the distinction between the related terms product technology (product innovation) and production technology (process innovation) is crucial for understanding innovations. Product innovations represent the invention and commercialization of entirely new products or services, whereas process innovations describe changing the production process of products and services through the adoption of new technology and innovations [39].

2.4. Innovation challenges and failures

To understand the obstacles to innovation and how leaders overcome them is very significant and it is related with innovation culture. What does an innovative culture look like in any organization? When an organization has in place a strong innovation culture, its people will facilitate innovation by questioning assumptions, thinking differently, experimenting, and successfully implementing new ideas and solutions. Leaders, of course, play a critical role in making this happen. And to understand what leaders must do to drive innovation, it's important to first understand the challenges that typically confront organizations as they strive to innovate [40].

Smith and Hall (2012), in their research and experience working with organizations around the world, they have identified four common innovation challenges: failure to understand stakeholders, lackluster ideas, aversion to risk-taking, and poor execution. They examine each of these challenges, as well as the actions leaders need to take to overcome them. As with all strategic and culture initiatives, innovation must begin at the top with the support and active involvement of senior leadership [41].

Nada, Ghanem, Mesbah and Turkyılmaz (2012) define causes of failure innovation. Among the many *causes of failure of innovation*, there are five that constantly appear in literature: (1) poor goal definition, (2) poor action alignment, (3) poor allocation of teams and resources, (4) poor feedback of results, (5) poor performance monitoring, (6) poor collaboration between customers and suppliers and accurate interpretation of requests from customers in SMEs [15]. According to this paper, to avoid these failures, business enterprises must increase their effective innovation capability. It depends on seven dimensions: (1) Innovation strategy, (2) Innovation process (3) Leadership and culture, (4) Collaboration and partnering and (5) Business and technology, (6) Innovative organization, and (7) learning [42].

2.5. Innovation management and sustainability

Today's global competitive environment, innovation management and sustainability are one of the most critical issues facing manufacturers and service providers. Increasing competitiveness through globalization process, has been forcing enterprises to innovate more than ever before. A company must be able to support its manufacturing operations by integrating the traditional strategic manufacturing requirements of "Lean" and "Agility" with business process strategies such as marketing and sales as well as technological and product innovation approaches in order to achieve a sustainable manufacturing environment. Therefore, it can be argued that in order to become sustainable, companies must become more flexible in catering for fluctuating market demands and have robust and resilient manufacturing processes and supply chains which will enable a company to become sustainable [43].

Innovation management shares many similarities with the management of technology, which seeks to maintain and improve the competitive position of a company through the use of technology, and often the terms are used interchangeably. Similarly, some studies tend to speak about "*innovation and technology management*," bringing together both concepts under one name. Another approach, historically very common, has been to associate *innovation management with new product development*. Trying to establish a distinction between the two, *the importance of managing the development and marketing of new products as part of the management of innovation is highlighted* [44].

Innovation Management never ever happens by accident. On the contrary, it occurs as a result of a concentrated focus on problems and challenges, and a fresh look at creating solutions that appear to be beyond the scope of existing answers. The customer generates nothing directly. No customer asked for the electric light bulb. No customer asked for photography, or for the telephone. No customer asked for an automobile. No customer asked for an integrated circuit. No customer asked for a pocket radio. No customer asked for a fax or photocopy. It is good to introduce, by innovation management, a new product that will do the job better, but where does innovation come from in the first place? The bottom line is that while it is necessary to innovate, to predict the needs of the customer, give them more, the organization that innovates and is lucky will take the market. Innovation is the process of creating something new that has significant value to an individual, group, organization, industry, or society. In other words, an innovation is a creation that has significant value. Innovation is how a firm makes money from its creativity. To do so, a firm needs to distinguish between ideas as being original or creative [45].

A few questions help organizations embark on the journey of innovation management [46]:

- Do you set aside time each week to conceptualize, brainstorm and think outside the box?
- What business are you really in? Do you provide products and/or services to your customers, or do provide solutions to problems your customers are having?
- Do you know what will stimulate customers to beat the path to your door?
- Are you measuring process indicators so that problems and opportunities can be addressed before they occur?
- What type of management system do you use to listen to your customers? Do you have the ‘ears’ to listen to their ‘voices?’
- Do you use any of the powerful innovation management tools? Which ones?
- Do you collect and analyze data about the core and support processes that are running your business?
- Are you measuring results? How and how much?
- Do you know how to transform ideas into blockbusters of innovation?

Igartua, Garrigós and Oliver (2010) found that innovation management involves many different components and requires management of a variety of areas. These are [47]:

- The strategy of innovation
- Portfolio management
- Project management
- Leadership and organizational culture
- Human resources
- External relations.
- Organizational design
- Innovation processes
- Performance measures
- Marketing
- Resources
- Knowledge and intellectual property management
- Technology

3. Conclusion

As we see, in today’s global and dynamic competitive environment, innovation management plays a central role for successful competition and its sustainability. Differentiation, cost, and response as competitive strategies should be evaluated with innovation management. Four main types of innovation can be pursued for competitive and sustainable innovation management. In order to achieve and maintain competitive success in today’s turbulent marketplace, top management must spend at least as much time thinking about customers’ needs and how these might be met innovatively as thinking about internal and external operations [48]. To be “World-Class” organizations, innovation management and sustainability with competitive strategies must be conducted and coordinated in a systematic way.

4. References

[1, 11, 13, 16, 17] Heizer J, Render B. Operations management. 10th ed. New Jersey: Pearson; 2011.

[2] Denton, DK. Gaining competitiveness through innovation. European Journal of Innovation Management 1999; Vol. 2, No. 2: pp.82-85.

[3, 20, 26] Alvano LD, Hidalgo A. Innovation management techniques and development degree of innovation process in service organizations. R&D Management 2012, Vol. 42, No. 1: pp.60-70.
[4, 32, 35, 48] Johne, A. Successful market innovation. European Journal of Innovation Management 1999; Vol. 2, No. 1: pp.6-11.
[5, 30] Alegre J, Lapiedra R., Chiva R. A measurement scale for product innovation performance. European Journal of Innovation Management 2006; Vol. 9, No. 4: pp. 333-346.
[6] Tipu SAA. Academic publications on innovation management in banks (1998–2008): A research note. Innovation: Management, Policy & Practice 2011, Vol. 13, Issue 2: pp.236-260.
[7, 40, 41] Smith A, Hall E. Innovation-driven leadership. T-D, March 2012, pp. 35-39.
[8, 39] Valmohammadi C. Investigating innovation management practices in iranian organizations. Innovation: Management, Policy & Practice 2012, Vol. 14, No. 2: pp. 247-255.
[9, 29, 33, 37] Rowley J, Baregheh A, Sambrook S. Towards an innovation-type mapping tool. Management Decision 2011, Vol. 49, No. 1: pp. 73-86.
[10, 21] Dobni CB. Measuring innovation culture in organizations. European Journal of Innovation Management 2008; Vol. 11, No. 4: pp. 539-559.
[12, 14] Prajogo DI, The relationship between competitive strategies and product quality. Industrial Management & Data Systems. Vol. 107, No. 1: pp. 69-83.
[15] Teeratansirikool L, Siengthai S, Badir Y, Charoenngam C. Competitive strategies and firm performance: the mediating role of performance measurement. International Journal of Productivity and Performance Management 2013, Vol. 62, No. 2: pp. 168-184.
[18, 23] Lyons RK, Chatman JA, Joyce CK. Innovation in services: corporate culture and investment banking. California Management Review 2007, Vol. 50, No. 1: pp.174-191.
[19] Baer M. Putting creativity to work: the implementation of creative ideas in organizations. Academy of Management Journal 2012, Vol. 55, No. 5: pp.1102-1119.
[22] Birkinshaw J, Hamel G, Mol MJ. Management innovation. Academy of Management Review 2008, Vol. 33, No. 4: pp.825–845.
[24] Cozijnsen AJ, Vrakking WJ, IJzerloo M. Success and failure of 50 innovation projects in Dutch companies. European Journal of Innovation Management 2000; Vol. 3, No. 3: pp. 150-159.
[25] Caraballo EL, McLaughlin GC. Individual Perceptions of innovation: a multi-dimensional construct. Journal of Business & Economics Research 2012, Vol. 10, No. 10: pp. 553-568.
[27] Valencia JCN, Valle RS, Jiménez DJ. Organizational culture as determinant of product innovation. European Journal of Innovation Management 2010, Vol. 13, No. 4: pp. 466-480.
[28, 31, 34, 36, 38, 45, 46] Harrington J, Voehl F. Innovation management: Part 1 A breakthrough approach to organizational excellence. International Journal of Innovation Science 2012, Vol. 4, No. 4: pp.231-243.
[42] Nada N, Ghanem M, Mesbah S, Turkyılmaz A. Innovation and knowledge management practice in Turkish SMEs. Journal of Knowledge Management, Economics and Information Technology 2012, Vol. II, Issue 1: pp. 248-265.
[43] Thomas A, Francis M, John E, Davies A. Identifying the characteristics for achieving sustainable manufacturing companies. Journal of Manufacturing Technology Management 2012; Vol. 23, No. 4: pp. 426-440.
[44, 47] Igartua JI, Garrigós JA, Oliver JLH. How innovation management techniques support an open innovation strategy. Research Technology Management 2010, May-June: pp.41-52.