

ISMC 2021
16th International Strategic Management Conference**AN EXAMINATION ON THE EFFECT OF STRATEGIC
MANAGEMENT PRACTICES ON ENVIRONMENTAL
INNOVATION**

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akdogana@erciyes.edu.tr, asuman.akdogan@manas.edu.kg**Abstract**

In order for firms to have competitive advantage, it is necessary to determine and implement future-oriented strategies as well as to carry out daily activities effectively and efficiently. Today, the environmental issue is seen as a competitive tool for most firms. In order to use this competitive tool, it is necessary to focus on innovation studies and these studies must be "sustainable", just like the main theme on which the environmental issue is focused. The sustainability requires looking to the future from today. Therefore, in this study, it is aimed to determine the effect of strategic management practices on environmental innovation. In addition, it can be said that at the end of the study, information will be obtained on whether environmental innovation is considered as a strategic decision by firms. For this purpose, data were collected from 32 small and medium-sized manufacturing enterprises (SMEs) operating in Kayseri (Turkey) through a questionnaire. The collected data were subjected to correlation analysis and regression analysis. The findings of the study showed that only participation in strategic management practices has significant effect on environmental product innovation. Planning flexibility and participation have significant effects on environmental process innovation.

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Keywords: Environmental product innovation, environmental process innovation, learning, participation, strategic management practices



1. Introduction

Today, firms are in the position of actors in a competitive environment whose conditions are getting harder and harder. While many firms take a position according to change by following a passive method, few firms anticipate change and prepare for the future by anticipating change. The aforementioned competitive environment makes it necessary to constantly renew itself and keep up with changing conditions. At this point, strategic management emerges as an important tool for firms. Strategic management practices enable the making of strategic decisions that shape how firms will behave in the future. Decisions that concern the entire firm, such as in which sector to operate, which products to produce, the competitive strategy to be followed or the arrangement of the organizational structure, can be given as examples of these decisions.

The environmental issue is perceived as an opportunity beyond a cost element for most firms. Reducing resource use and waste provides cost advantages for firms, while increasing firm image and reputation offers long-term opportunities. In addition, the responsibilities of firms to the society may cause them to follow environmental practices. Environmental innovation can be defined as the product and process development and application studies carried out by firms in order to reduce the damage to the environment (Barbieri & Santos, 2020; De Souza et al., 2018; Long et al., 2017).

It is important for firms to take decisions about environmental innovation from a strategic point of view. Thus, it will be possible for environmental innovation to be continuous and successful. To reveal the possible relationships between environmental innovation and strategic management practices will be a guide for firms. Therefore, in this study, it is aimed to determine the effect of strategic management practices on environmental innovation. In addition, if the relationship between environmental innovation and strategic management practices is revealed at the end of the study, it can be concluded that environmental innovation is considered as a strategic decision for firms. In line with this purpose, conceptual information on strategic management practices and environmental innovation has been presented.

On the other hand, as in the rest of the world, SMEs constitute the majority of all firms in Turkey. The transformation of SMEs will have significant benefits at the micro and macro level. Although there have been studies conducted on SMEs in recent years, it is seen that strategic management and innovation issues are mostly examined in large firms. Therefore, SMEs constitute the sample of this study. The data collected through a questionnaire from 32 manufacturing SMEs were analyzed with statistical program. Finally, the results of the research were presented and suggestions were made for researchers and practitioners.

2. Literature Review

Strategic management, often referred to as “policy” or just “strategy” today, refers to the direction that organizations and often firms follow. It includes topics that determine the reasons for success and failure in terms of top management or organizations. The basic assumption of the strategic management field is that these choices have a critical impact on the success or failure of the firm and they should be integrated (Kasych et al., 2020; Rumelt et al., 1991). Strategic management involves constantly scanning

and adapting to the environment, rather than simply scanning the environment in the annual planning review. Strategic management is a continuous and dynamic process that includes firms gaining competitive advantage as a result of their efforts to adapt successfully to their environment. The competitive advantage allows the firm to capitalize on opportunities and minimize environmental threats. Therefore, strategic management is a cumulative and co-evolutionary process between firms and the environment in which they operate (Stead & Stead, 2008).

There are different views on the classification of strategic management practices. In this study, classification consisting of scanning (analysis) intensity, planning flexibility, learning from mistakes and participation dimensions was used in accordance with some previous studies (Barringer & Bluedorn, 1999; Doğan, 2008; Fidan et al., 2016). Scanning (analysis) intensity or environmental scanning refers to the management of the process of having information about the events and changes in the environment of the firm. Broad, effortful, and sustained scanning provides information to managers about events and changes in their respective environments, which facilitates the recognition of opportunities (Barringer & Bluedorn, 1999; Nag et al., 2020).

Researchers have noted that planning has a natural tendency to be inflexible, and the creation of forward plans tends to make management inflexible. Therefore, planning flexibility is an organizational design feature that has received little attention in research, and is the ability of a firm's strategic plan to change as environmental opportunities or threats arise. It has the assumption that firms in complex environments maximize their performance by adopting flexible planning systems. Flexible planning systems allow firms to quickly adjust their strategic plans to follow opportunities and keep pace with environmental change (Barringer & Bluedorn, 1999; Ojha et al., 2020).

Learning from mistakes involves recognizing that unexpected and undesirable results occur and acquiring knowledge that will reduce the likelihood of these experiences occurring in the future. While mistakes are almost inevitable and often costly, they can also provide valuable learning experiences. Experiential learning is considered to be a particularly useful and effective way for firms and their employees to learn from mistakes. In this process, employees reflect on their performance and results, discover cause-effect relationships, and identify strengths and weaknesses in their own efforts. They gain the ability to evaluate their own behaviour and prepare for future challenges (Tjosvold et al., 2004; Weinzimmer & Esken, 2017).

Participation refers to the attendance of firm employees in the formulation and implementation of the strategy in the strategic management process (Zhou et al., 2019). Particular attention is paid to the involvement of lower level employees in the process (Fidan et al., 2016). Diversity of ideas and experience is provided in the firm through participation. It is argued that participatory strategic management creates better strategic choices, more realistic strategies, better adaptation to the changing environment and reaching goals more easily (Witek-Crabb, 2012).

Schumpeter defined innovation in two ways (Schumpeter, 1939); according to the first definition, innovation means changing the form of the function of the product. From this definition, it can be understood at first that innovation consists of the same type of product that has been produced before. However, innovation needs to be considered as a new production function. Schumpeter's second definition of innovation is based on product cost. When the prices of the factors of production are fixed,

the total costs must increase in direct proportion to the amount of output. Although the prices of the factors do not decrease for the same amount of product produced before, it can be said that innovation exists when less costs are incurred for the same amount of output compared to the previous one

Another definition of innovation, which is frequently used in the literature and which is generally taken as a basis by the public institutions of the member countries, belongs to the Organization for Economic Development and Cooperation (OECD). In the OECD definition, the term innovation refers to both a process and the result of this process. Accordingly, innovation is a new or improved product or process used in the production of a product. It also a combination of them that is offered to potential users that is significantly different from a firm's previous products or processes (OECD/Eurostat, 2018).

Since Schumpeter, innovation has been widely recognized as one of the most important drivers of economic value and performance. In addition to being an important tool for firms in meeting customer demands and improving costs, innovation has also started to be used for environmental purposes as a result of the increasing awareness of consumers to the environmental issues and the widespread use of environmentally friendly management. Compared to traditional innovation, this type of innovation is a relatively new concept and called environmental innovation, green innovation, sustainable innovation or eco-innovation. It is considered an important win-win strategy where firms restructure their business practices to contribute to both firm and environmental performance (Zhang & Walton, 2017; Hizarci-Payne et al., 2021). In this study, the expression of environmental innovation was preferred.

Environmental innovation refers to a wide variety of innovations such as renewable energy technologies, pollution prevention plans, waste management equipment, green financial products and biological agriculture that significantly reduce environmental impact as well as providing customer and firm value (Karakaya et al., 2014; Tsai & Liao, 2017). It is a new or significantly improved product (good or service), process, organizational method or marketing method that creates environmental benefits compared to alternatives (Cegarra-Navarro et al., 2019).

Environmental innovation is a series of innovation practices that include an improved product, a new process and new systems to reduce environmental degradation, namely product innovation, process innovation and organizational innovation dimensions (Cheng et al., 2014; Xie et al., 2019; Ch'ng et al., 2021). Environmental product innovation refers to the use of new or significantly improved goods or services in terms of resource conservation and environmental protection (Liao, 2018; Shao et al., 2020). It aims to modify or improve product designs by using non-toxic compounds or biodegradable materials in the production process to reduce its negative impact on the environment and increase energy efficiency (Xie et al., 2019). Environmental process innovation is related to the use of new techniques in the production process (Cheng et al., 2014; Hu et al., 2017). It is the efficient use of resources in all aspects of the production process to reduce environmental pollution (Liao, 2018). Implementing cost-saving environmental process innovation through better use of materials and energy often requires additional investments, but the anticipated productivity gains often make these investments attractive (Horbach, 2018).

The uncertainty of customers' preference for products developed with environmental innovation, market uncertainty and the risks of insufficient return on investment are some of the factors that force firms in their innovation decisions (Karakaya et al., 2014). Strategic management practices often involve

decisions that affect a firm's relationship with its environment and affect both strategy and structure selection. Market segmentation and its corresponding positioning are among the most important contributions of marketing to strategic management. Market segmentation is defined as the division of a market into subsets based on different customer needs and the way they buy and use a product or service and positioning is the decision to serve a certain segment with a program tailored to specific customer needs (Biggadike, 1981; Saleem et al., 2018). Producing environmentally friendly products or creating an environmentally friendly firm image can be considered as a strategic decision in terms of market segmentation and positioning.

Environmental innovation reduces the resource use of firms. Energy, water and raw material consumptions are decreasing, especially with environmental process innovation. The use of these resources can also be reduced through environmental product innovation by changing product characteristics. However, environmental product innovation primarily focuses on the development of greener products. Consumers' environmental awareness and interest in environmentally friendly products have been increasing. Therefore, environmental innovation can be used as a strategic tool for the firms to gain competitive advantage.

Table 1. A literature review on strategic management and innovation relationship

Authors	Variables	Method	Main Findings
Cingöz and Akdoğan (2013)	<ul style="list-style-type: none">- Strategic flexibility- Exploratory innovation- Developing innovation- Environmental dynamism	69 firms operating in different sectors in Turkey Questionnaire	A significant relationship was found between strategic flexibility and innovation performance.
Fidan, Çetin and Yıldırım (2016)	<ul style="list-style-type: none">- Scanning intensity- Planning flexibility- Learning from mistakes- Participation- Speed of technology change- Market complexity- Innovation performance	121 industrial firms in Turkey Questionnaire	Scanning intensity, planning flexibility and participation affect innovation performance.
Onağ and Tepeci (2016)	<ul style="list-style-type: none">- Organizational learning ability- Organizational innovation- New product performance- Business performance	285 managers of 6 firms listed in Turkey's largest 1000 Questionnaire	Organizational learning capability has an impact on organizational innovation and new product performance.
Özdemir and Sönmez (2018)	<ul style="list-style-type: none">- Vision- Participation in work- Fit- Consistency- Product innovation	245 firm managers operating in Turkey Questionnaire	Dimensions of vision and work engagement have significant effects on product innovation.
Çetinkaya and Gülbahar (2019)	<ul style="list-style-type: none">- Strategic management- Product innovation- Process innovation- Market innovation- Organizational innovation	300 SME managers in 35 different sectors operating in Turkey Questionnaire	A significant relationship was found between strategic management and innovation processes.
Amara and Chen (2021)	<ul style="list-style-type: none">- Participatory decision making- Environmental innovation	365 firms from the agriculture and food	Participatory decision making increases

Authors	Variables	Method	Main Findings
Davis and Bendickson (2021)	- Economic motivation - Ethical motivation - Legislation motivation - Stakeholder pressure	sector in Tunisia Questionnaire	environmental innovation capability through innovation motives.
	- Dynamic capabilities – sensing - Dynamic capabilities – seizing - Strategic planning - Structure - Innovation	147 participants from small firms and 113 participants from large firms in the USA Questionnaire	Strategic planning is valuable for small firm innovation and that organizational structure has a positive effect on large firm innovation.

The results of studies investigating the relationship between strategic management practices and innovation and summarized in Table 1 show that there are generally same-sided and significant relationships between strategic management practices and innovation. Accordingly, the hypotheses of the study are:

H₁: Scanning intensity in firms has significant effect on environmental product innovation.

H₂: Planning flexibility in firms has significant effect on environmental product innovation.

H₃: Learning from mistakes in firms has significant effect on environmental product innovation.

H₄: Participatory decision-making in firms has significant effect on environmental product innovation.

H₅: Scanning intensity in firms has significant effect on environmental process innovation.

H₆: Planning flexibility in firms has significant effect on environmental process innovation.

H₇: Learning from mistakes in firms has significant effect on environmental process innovation.

H₈: Participatory decision-making in firms has significant effect on environmental process innovation.

3. Research Method

3.1. Sampling

The sample of the research consists of 32 manufacturing SMEs operating in Kayseri. In their distribution by sector, the firms operating in the furniture (34.4 percent) and metal products (18.7 percent) sectors share the first two places. 44.7 percent of the firms have been operating for 10 or more years. According to the number of employees, it is seen that the firms with 50 or less employees (81.2 percent) are in the majority.

3.2. Data collection method

Research data were collected through a questionnaire consisting of two scales. Strategic Management Practices Scale (Doğan, 2008), which is also used by Fidan et al. (2016), was used to determine the levels of strategic management practices. In the scale, there are 12 items in the dimension of scanning intensity, 8 items in the dimension of planning flexibility, 3 items in the dimension of learning from mistakes and 4 items in the dimension of participatory. Participants were asked about their

level of agreement with these items using a five-point Likert-type scale (1=Strongly Disagree, 5=Strongly Agree).

Environmental Innovation Scale (Cheng & Shiu, 2012) adapted into Turkish by Yıldız Çankaya and Sezen (2015) was used to determine the environmental innovation levels of firms. The scale has 6 items in the dimension of environmental product innovation and 4 items in the dimension of environmental process innovation. Participants were asked about their level of agreement with these items using a five-point Likert-type scale (1=Strongly Disagree, 5=Strongly Agree).

3.3. Findings

The results of the correlation analysis show that there are limited significant relationships between the variables (see Table 2). There are significant and positive correlations between participation and environmental product innovation ($r=.451, p<.01$) and environmental process innovation ($r=.746, p<.01$).

Table 2. Mean, standard deviation, reliability and intercorrelations

Variables	Mean	Standard deviation	1	2	3	4	5	6
1. Scanning intensity	4,13	,46	(,797)					
2. Planning flexibility	4,09	,68	,434*	(,838)				
3. Learning from mistakes	4,33	,63	,293	,272	(,695)			
4. Participation	3,27	,99	,087	,182	,121	(,838)		
5. Environmental product innovation	3,60	,64	,022	,004	,297	,451**	(,786)	
6.Environmental process innovation	3,95	,86	-,075	-,205	,010	,746**	,368*	(,855)

* $p<.05$ ** $p<.01$

Regression analyses were conducted to test the model and hypotheses created in line with the purpose of the research.

Table 3. Regression analysis to determine the effect of strategic management practices on environmental product innovation

Predictors	B	SE	β	Tolerance	VIF
Scanning intensity	-,029	,128	-,042	,779	1,284
Planning flexibility	-,098	,131	-,138	,772	1,296
Learning from mistakes	,602	,355	,293	,883	1,132
Participation	,434	,162	,444*	,961	1,040
Constant	12,751	6,505			

$R^2=,286$; Adjusted $R^2=,180$; $F=2,701$; $p<.05$

As shown in Table 3, multiple regression analysis results on the effect of strategic management practices on environmental product innovation are statistically significant ($F=2.701, p<.05$). Only participation has significant effect on environmental product innovation ($\beta=.444, p<.05$). Therefore, hypothesis H_4 is supported, on the other hand hypotheses H_1, H_2 and H_3 are rejected.

The results of multiple regression analysis in Table 4, which were performed to determine the effect of strategic management practices on environmental process innovation, are statistically significant ($F=14.150$, $p<.001$).

Table 4. Regression analysis to determine the effect of strategic management practices on environmental process innovation

Predictors	B	SE	β	Tolerance	VIF
Scanning intensity	,004	,077	,007	,779	1,284
Planning flexibility	-,224	,078	-,357*	,772	1,296
Learning from mistakes	,013	,212	,007	,883	1,132
Participation	,701	,097	,810**	,961	1,040
Constant	13,553	3,880			

$R^2= ,677$; Adjusted $R^2= ,629$; $F= 14,150$; $p<.001$

When beta values are examined, it is seen that planning flexibility ($\beta=-.357$, $p<.05$) and participation ($\beta=.810$, $p<.01$) have significant effect on environmental process innovation. As a result, hypotheses H_6 and H_8 are supported and hypotheses H_5 and H_7 are rejected.

4. Conclusion and Discussion

Firms aim to gain long-term competitive advantage with strategic management practices. Having a competitive advantage is important for firms in terms of high profitability and continuity of their activities. Environmental innovation provides cost advantages to firms by reducing resource use and waste, as well as providing long-term opportunities such as increasing firm image and reputation. Therefore, in this study, we aimed to determine the effect of strategic management practices on environmental innovation. According to findings of the study, some of the strategic management practices have significant effect on environmental innovation.

In the hypothesis tests, it was concluded that only participation had a significant effect on explaining the level of environmental product innovation. The significant impact of participation on environmental product innovation is in line with some previous studies (for example, Amara & Chen, 2021; Fidan et al., 2016; Özdemir & Sönmez, 2018). In order for environmental product innovation to take place, it is necessary to know the market and the consumer and to have a consumer perspective. Therefore, the more people and stakeholders are involved in the process, the more ideas and suggestions will be possible to develop. The results of the research showed that the level of participation was low. This result may have emerged because strategic decisions in SMEs are mostly taken by owners or top managers. Considering this result, it is predicted that there will be an increase in the number of environmental product innovations if participation is improved.

Planning flexibility and participation from strategic management practices have a significant impact on environmental process innovation. The effect of strategic management on process innovation is consistent with the findings of Çetinkaya and Gülbahar's (2019) study. Since environmental process innovation mostly involves the improvement of production processes, the contributions of lower-level employees are needed more than product innovation. There is inverse relationship between planning flexibility and environmental process innovation ($\beta=-.357$, $p<.05$). This result shows that if the plans are

implemented flexibly, process innovation decreases. Considering that planning is applied more flexibly in SMEs compared to large enterprises, risk arises in terms of environmental innovation. Therefore, it shows that plans should be implemented more strictly in order to increase environmental innovation.

This study has some limitations. The most important limitation of the study is related to the data collection period. This situation limits the number of firms reached. Another limitation of the study is the impact of the Covid 19 pandemic on the data collection process. Pandemic conditions have affected the number of firms reached. In addition, it became difficult to explain to the respondents and to determine whether the question statements were clearly understood. The sample of the research was selected from the manufacturing SMEs in the province of Kayseri. This situation creates a limitation in terms of generalizing the research findings to all firms. Working on different samples is important in terms of testing the research findings. Data collection in different time periods will contribute to the validation of the research results.

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