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\*Corresponding author: Kamaledin Rahmani, Department of Industrial Management, Tabriz Branch, Islamic Azad University, Tabriz, Iran  
E-mails: [kamaledinrahmani@iaut.ac.ir](mailto:kamaledinrahmani@iaut.ac.ir), [kamaledinrahmani110@gmail.com](mailto:kamaledinrahmani110@gmail.com)

Reviewing editor:  
Shaofeng Liu, University of Plymouth, UK

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## OPERATIONS, INFORMATION & TECHNOLOGY | RESEARCH ARTICLE

# Sustainable supply chain in food industries: Drivers and strategic sustainability orientation

Korosh Emamisaleh<sup>1</sup> and Kamaledin Rahmani<sup>1\*</sup>

**Abstract:** Today, the concept of sustainable development in supply chain management is introduced as one of the basic concepts in production management. Paying attention to economic, social and environmental needs of the society is essential in gaining competitive advantage in the global market. Therefore, in order to achieve sustainable development, appropriate programs and strategies should be considered by managers throughout the supply chain. Moreover, the internal and external drivers of the environment in the supply chain will lead organizations—willingly or not—towards sustainability. Hence, this paper examines the internal and external drivers in order to study strategic sustainability orientation. The results showed that internal drivers, including attitudes of managers and their support for sustainable programs, has a positive impact on strategic sustainability orientation. The study showed that external drivers of the organizations affect internal drivers, and compared to external drivers, internal drivers have a more important role in creating sustainable orientation within an organization. In addition, the mediating role of internal drivers in relation to external drivers and strategic sustainability orientation is approved. This study is conducted on 120 food industry companies of Iran.

**Subjects:** Environmental Management; Statistical Theory & Methods; Statistics for Business, Finance & Economics

**Keywords:** internal drivers; external drivers; supply chain management; sustainability orientation

### ABOUT THE AUTHORS

Korosh Emamisaleh is a PhD candidate in industrial management at Tabriz Islamic Azad University. His research interests include supply chain management, quality management, and production management. He is a university lecturer at Islamic Azad university branch of South Tehran and Islamic Azad university of Saveh. His articles has been published in international journals.

Kamaledin Rahmani is an associate professor of industrial management at Tabriz Islamic Azad University. His research interests include production management, knowledge management, and supply chain management. His articles has been published in International journals. He has run a lot of projects in Iranian companies in the field of production management.

### PUBLIC INTEREST STATEMENT

The main purpose of the present study is to investigate the role of internal and external drivers on attitudes towards sustainability strategies in the food industry of Iran. Thus, external drivers and their impact on tendency to sustainable strategy will be examined. External drivers, including three factors of normative, mimetic, and coercive drivers, are analyzed. Furthermore, internal drivers in supply chain and their impact on tendency to sustainable strategy will be studied and, these drivers are analyzed regarding factors such as the attitude of managers, top management support, employee motivation. This paper is applicable for senior managers of the organizations to achieve sustainable strategies. It can also be useful for the people who work in the field of policy in the field of sustainability. This paper can also be useful for the companies that want to enter the international markets because in near future the sustainability issue will become a key issue in international trade.

## 1. Introduction

Sustainable development is defined in the Brundtland Report of the World Commission on Environment and Development (WCED, 1987) as: “the development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. In the twenty-first century, this concept played a fundamental role in the supply chain of the companies. Supply Chain Management (SCM) is described as the management of exchange of information and materials in logistics process that continues from raw materials procurement to delivery to the customer. In this process, a large number of suppliers, manufacturers, and customers are involved. SCM must be responsive to the flow of material in the supply chain and its relevance to the society and the environment. In this case, the response of supply chain management to three issues of environment, economy and society makes up the core concepts of sustainable supply chain (Chardine-Baumann & Botta-Genoulaz, 2014).

It is essential that manufacturing companies move towards sustainable supply chain and respond to the environment. Environmental conditions have forced companies to implement sustainability strategies. For instance, in 2001, Sony had to bear extensive costs for replacing parts, storing, and repackaging nearly 1.3 million of its best-selling PlayStations. These PlayStations were stopped at the Dutch border because unsafe levels of cadmium were detected in the cables of the consoles (Business Week, 2005). The problem-causing cables were manufactured by Sony’s supplier. Also, in recent years, lack of attention to the issue of sustainability in manufacturing has created many problems which include human health, soil bio diversity, desertification, water use and water pollution and food safety. In the social sphere, especially in countries where traditional structures and cultural heritage are still there, lack of attention to cultural issues is one of the main concerns of policy-makers who want to protect the cultural health of future generations. Meaning that, manufactured goods might change beliefs and thoughts of future generations and the cultural and social beliefs of the society might change in the future. On the other hand, factors, such as social networks, social cohesion, level of trust, norms and values of the society are also among social concepts that lack of attention to the issue of sustainability in manufacturing may cause them to diminish in future generations (Dempsey, Bramley, Power, & Brown, 2011). In addition, decrease in resources due to rapid changes in customer demands has led the manufacturers using the resources inefficiently and regardless of the resources crisis and this has caused many problems. These concepts show that manufacturing companies cannot offer their products to the market without considering environmental, social and economic conditions throughout the supply chain. Drivers have a major role in the development of sustainable supply chain and the tendency towards it. These drivers are classified as internal and external. According to a study (Liu, Ke, Wei, Gu, & Chen, 2010) external drivers include normative, mimetic and coercive drivers. Coercive drivers, such as laws and regulations, are there from governments or organizations that are active in the field of sustainability that forces organizations to move towards sustainability. Moreover, mimetic drivers occur when competitors are successfully consistent with market conditions and organizations must behave mimetically, depending on their competitors’ performance. Normative drivers come from expectations imposed by the society and associations that are active in the field of sustainability such as trade unions, NGOs and local associations of consumers. Besides, in previous studies drivers, such as attitudes of managers, senior management support, employee motivation are presented as internal drivers of tendency to sustainability in supply chain (Signori, Flint, & Golcic, 2015; Tachizawa, Gimenez, & Sierra, 2015).

Daily and Huang (2001) examined the role of human resource management factors as internal drivers in achieving sustainability in supply chain. They argued that corrective actions taken by managers and employees, supervision of managers, organizational training and managers’ support were effective in achieving sustainable supply chain. There is no specific strategy or instruction for sustainable supply chain but, this concept is dependent on strategic approach of the managers, employees and environmental conditions. However, for the successful implementation of sustainability strategies, attention must be paid to environmental factors, government regulations and social norms throughout the supply chain from retailer to the customer. Sustainable strategic orientation has been considered in economic, social and environmental levels in previous studies

(Baumgartner & Rauter, 2017). In particular, sustainable development in food service industry is very important because of its impact on modern dietary life and the environment through complex supply chains. Baldwin, Wilberforce, and Kapur (2011) analyzed the environmental impacts of the food service industry using life cycle assessment, which is a method to compile and evaluate environmental impacts of a product or service over its entire life-cycle cradle-to-grave (i.e. from food supply, storage, production, to service), and they verified the significant impacts of each stage. It seems that supply chain in the food industry is one of the most important sectors of the industry which its products and distributions of food throughout the society and its meeting the needs of customers should be under control and supervision. In food industry, moreover, the use of available resources in the environment must be done according to the sustainable attitude of social and economic perspectives. Food is one of the most widely used products in society, thus, in recent years sustainability studies in the field of food industry has been done by many researchers. A lot of research has been done on sustainability in food industry but sustainability strategies and drivers have received less attention (Kim, Yoon, & Choi, 2016).

The main purpose of the present study is to investigate the role of internal and external drivers on attitudes towards sustainability strategies in the food industry of Iran. Thus, external drivers and their impact on tendency to sustainable strategy will be examined. External drivers are analyzed under three factors of normative, mimetic, and coercive drivers. Furthermore, internal drivers in supply chain and their impact on tendency to sustainable strategy will be studied and, these drivers are analyzed regarding factors such as the attitude of managers, top management support and employee motivation. On the contrary, external drivers are analyzed as an effective factor on internal drivers and, the mediating role of internal drivers in relation to external drivers and strategic sustainability orientation is also discussed. Previous studies have mostly considered the issue of sustainability from the perspective of external drivers and internal drivers in the sustainable supply chain has been examined less. In this study, however, both external and internal drivers and their impact on tendency to sustainable strategy in supply chain of food industry are studied coherently. In general, the aim of this research is to determine which of the external or internal drivers cause the strategic sustainability orientation of food industry enterprises.

## 2. Literature review

### 2.1. Sustainable supply chain drivers

Today, it is essential that organizations move towards sustainability. Manufacturing organizations, willingly or not, must be committed to sustainable thinking of the environment because there are drivers in the environment which forces them to adhere to sustainability standards. In this study, these drivers are divided into internal and external drivers. The external drivers are investigated based on institutional theory that describes how external pressures influence an organization. DiMaggio and Powell (1983). Also, internal drivers are studied according to resource-based view of the firm showing that the unique resources of a firm include all of its assets and capabilities, its organizational culture, its attributes, information, and the knowledge it controls. These enable the firm to conceive of value-creating strategies and implement them to improve its efficiency and effectiveness (Barney, Wright, & Ketchen, 2001).

External drivers are dependent on the surrounding conditions so that they force members of the supply chain (suppliers, distributors, and consumers) to have tendency towards sustainability. In this study, these drivers are divided into normative, mimetic, and coercive drivers (DiMaggio & Powell, 1983; Ketokivi & Schroeder, 2004; Zsidisin, Melnyk, & Ragatz, 2005). Coercive drivers stem from political issues and regulations and laws of the environment which are set by governmental agencies and international issues. These pressures are the major factors affecting a company's decision to initiate measures of sustainability. Examples of coercive drivers in sustainability include: requirements, policies and legal guidelines set by the government concerning social issues and the environment. In this case, organizations must adhere to the regulations and laws of sustainable development in order to avoid the increased costs due to illegal actions caused by illegal activities and paying

possible fines. In addition, organizations often encounter costly lawsuits in providing reports to shareholders and supervisors and this issue will seriously hurt their public image and their ties even with customers will be flawed (Perez-Batres, Miller, & Pisani, 2011; Teo, Wei, & Benbasat, 2003). Normative drivers are caused by suppliers as well as working units, commercial communications, local communities, and non-governmental groups for the organization. The working groups cultivate cultural values among organizations involved in the supply chain and form sustainable behavior among their members. This means that all involved members move towards sustainability relying on the values and beliefs of the community, while there is no need for legislation or coercion. Normative drivers originate from expectations of public gatherings, such as local organizations, NGOs, customers. In order to guarantee their positions and maintain the legitimacy of their working procedures, companies have to comply with the norms of society (Delmas & Toffel, 2004; DiMaggio & Powell, 1983; Liu et al., 2010; Teo et al., 2003). Mimetic drivers are developed when the competitors try to follow sustainability strategies i.e. observing the success of their competitors in the market which is created by developing a sustainable approach, organizations are motivated to move towards sustainable thinking. This is an imitative behavior which models the competing companies. This imitative behavior is caused when the goals of the organization are vague. Therefore, organizations have no choice but to imitate competitors, and it also has the lowest cost for them (Liu et al., 2010). Drivers and inter-organizational factors of the supply chain can also be one of the aspects affecting the company moving towards sustainability. This issue has been considered in previous studies. The core focus of the previous studies have been on the thinking of managers and employees (Defee, Esper, & Mollenkopf, 2009; McFadden, Henagan, & Gowen, 2009; Reed, 2002).

Top manager is introduced as the driver for many organizational activities (Defee et al., 2009). The researchers believe that the beginning and the successful implementation of organizational change depend on the view of managers. The organization's orientation towards sustainability is an important change that demands changing culture of the organization in general (Harris & Crane, 2002). Thus, the attitude can be a critical success factor in the implementation of sustainability measures (Defee et al., 2009). The top management should adopt an active and committed attitude towards sustainability so that the culture of need for change for sustainable development be institutionalized in the culture of an organization. This active and committed stance forms when top managers don't look at sustainability as a risk or threat but consider it a change for opportunities (Aragon-Correa & Sharma, 2003).

Companies with positive attitude towards sustainability will have a precise orientation towards it and this will lead to proper implementation of sustainable development practices which are based on the attitude of top management. After an active and committed approach towards sustainability is formed in the company, top managers should strongly support sustainable thinking. This support plays an important role in the follow-up actions in line with organizational changes (Mentzer, Min, & Zacharia, 2000). Top management support of sustainability refers to the involvement of top managers in sustainability initiatives and funding, and their providing of other resources needed by operational departments (Chen & Paulraj, 2004). In addition to the managers, the staff should also have an incentive to implement sustainability strategies and this can be related to environmental conditions within the organization and attitudes of managers. However, for the employee's involvement to be efficient it is necessary that they be supported and encouraged by the top management. If the employees are not encouraged to honor their commitment to sustainability, however, it will be impossible to efficiently implement sustainability measures. Employees that are seriously convinced to follow these measures are more motivated to take them and therefore, they certainly have a significant role in promoting sustainable development (Daily & Huang, 2001; Reed, 2002). In this article, with regard to the issues raised, internal drivers include attitudes of managers, top management support and motivation of employees (Table 1).

## **2.2. Strategic sustainability orientation**

Strategic Sustainability Orientation is defined by Pagell and Wu (2009) as the active and committed decision-making of an organization and its whole supply chain about the economic, social and

**Table 1. Definition of sustainability drivers**

Concept	Definition	Recourse
External drivers	There are drivers influencing the organization from the external environment and the organization should respond to these drivers, considering the situation	Zsidisin et al. (2005), Ketokivi and Schroeder (2004), DiMaggio and Powell (1983), Teo et al. (2003), Perez-Batres et al. (2011) and Liu et al. (2010)
Mimetic pressures	The demands that arise when main competitors successfully adopt sustainability initiatives	
Coercive pressures	Sustainability-related political influences exerted by governmental regulations and/or firms on which the focal firm depends, such as important customers and a parent company	
Normative pressures	The demands that stem from collective societal expectations, such as important suppliers, local communities, and NGOs with regard to sustainability	
Internal drivers	There are drivers in the internal environment of the organization based on which the organization moves towards sustainability	Clifford Defee et al. (2009), McFadden et al. (2009), Reed (2002), Aragon-Correa and Sharma (2003), Chen and Paulraj (2004), Daily and Huang (2001) and Reed (2002)
Managerial attitude	The attitude of managers to the issue of sustainability that can be positive or negative	
Top management support	Support of the senior management of the sustainability activities of the organization	
Employee motivation	Motivation of employees to participate in sustainability activities of the organization	

environmental issues. Pagell and Wu (2009) introduced four aspects of Strategic Sustainability Orientation to explain this concept; (a) achieving economic, social and environmental goals, (b) sustainable attitude towards resources that should be compatible with social and environmental goals, (c) the concept of sustainability should exist in all the discourses, practices, and organizational decisions, (d) sustainability values and beliefs that have to be implemented in a modern way in the business model of organizations, and (e) common respond of the organizations to the environment all across the supply chain, meaning, the issue of sustainability is relevant to all members of the organization, not a particular organization or part of its supply chain. Strategic sustainability orientation explains how sustainability issues are operated and administered at the organization. These orientations are discussed in economic, social and environmental areas (Baumgartner & Rauter, 2017). Baumgartner (2010) introduce economic orientation of strategic sustainability as an effort to promote innovation and technology in the organization, so that they can produce clean products that are compatible with environmental conditions. Moreover, they consider factors, such as knowledge management, collaboration in the process of sustainability, participation in publishing sustainability reports as part of economic strategies of sustainability. In general, sustainable economic orientation includes an active commitment of a company to consider sustainability issues in financial decisions and market. These decisions can relate to production and the way to use resources in production of the products (Kroes & Ghosh, 2010). Baumgartner (2010) believes that sustainable social orientation consists of internal and external social orientation. He defines internal strategies as staff safety, rules of the organization, and employee participation in decision-making, organizational justice, and the protection of customer information. External strategies include participation of organizations in social and cultural programs, responding to the rights of customers and society, providing the right information to customers and meeting the needs of the society. Baumgartner and Rauter (2017) introduce sustainable environment orientation as a process that its inputs are raw materials which must be returnable to the environment. Besides, the outputs of this process are products and

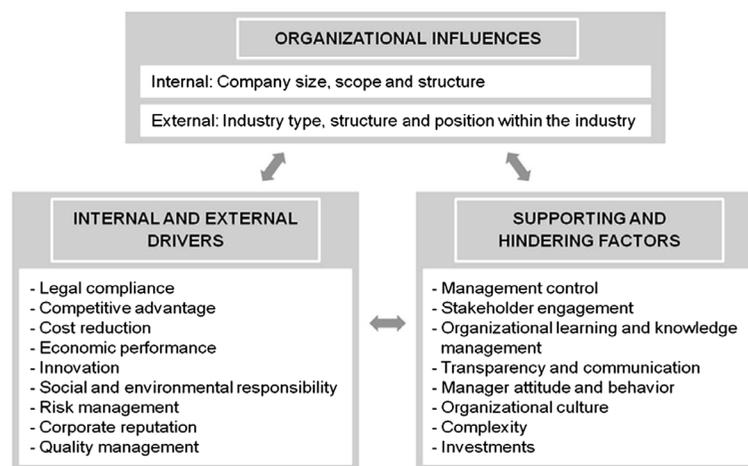
services that do not harm the environment or threaten the life cycle of plants and animals. This should be observed throughout the supply chain as a sustainable strategy. In addition, Laudal (2011) states that an organization must have strategic sustainability orientation to achieve success. To do so, they must coordinate between their culture, organizational activities and their strategies in order to meet economic, social and environmental needs and this must be addressed all across the supply chain.

### 2.3. The conceptual model and hypotheses

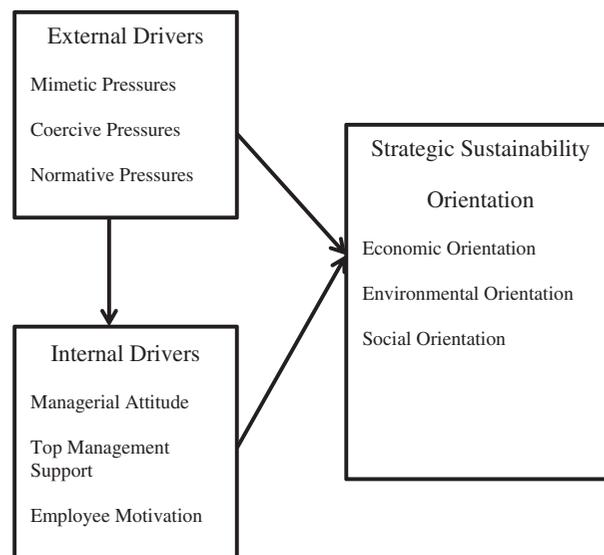
Based on the two concepts of “sustainable supply chain drivers” and “strategic sustainability orientation”, discussed in the previous sections, the conceptual model of this study is presented. Building on the studies of Engert, Rauter, and Baumgartner (2016) that examined concepts of drivers and organizational factors published in 114 articles in scientific journals, it is concluded that internal and external drivers can be linked to the strategic sustainability orientation. This model is shown in Figure 1, which is a proper basis for the conceptual model of this article.

In general, the previous studies related to the topic of this article can be divided into three areas of external driver, internal drivers, and strategic sustainability orientation. Furthermore, the relationship between these variables in the conceptual model is shown in Figure 2.

**Figure 1. Integration of corporate sustainability into strategic management (Engert et al., 2016).**



**Figure 2. Conceptual model.**



Internal drivers suggest how organizations move towards sustainability and its strategies. Signori et al. (2015) state that the attitude of managers to the issue of sustainability can be effective on the successful implementation of sustainability strategies. The implementation of sustainability strategies will also help to improve competitiveness of organizations and create appropriate business opportunity. Cagliano, Caniato, and Worley (2016) showed that to become a sustainable organization there must exist a sustainable strategic planning and strategic sustainability must be developed, and finally, relying on innovation and the creation of appropriate thinking in the staff and managers, these strategies should be implemented in the organization. Meanwhile, motivation of the staff can play a major role in the success of sustainability strategies.

Tachizawa et al. (2015) argue that cooperation and coordination built on the support of top managers in the supply chain is effective in shaping sustainable strategies. Chan, He, Chan, and Wang (2012) believe that internal drivers include the perception of the staff of the importance of sustainability, employee motivation and support of the top management. They believe these drivers are effective in improving the sustainable performance of the organization. Green, Zelbst, Meacham, and Bhadauria (2012) consider activities of managers within the organization and top management support of the sustainability processes to be effective in the formation of sustainability strategies. They argue that the support of the managers at all levels of the organization and making appropriate decisions on the allocation of resources to organizational units help improve the sustainable performance in economic, organizational and operational areas. Hanna, Rocky Newman, and Johnson (2000) refer to the role of involvement and motivation of employees in sustainable processes of an organization. They show that employee participation in sustainability will lead to good performance in the environment and operational performance of the organization, and this makes the strategies and objectives related to sustainability of the organizations run successfully. Therefore, based on the material presented, it is hypothesized that;

H1: Internal drivers have a positive influence on strategic sustainability orientation.

H1a: Managerial attitude has a positive influence on strategic sustainability orientation.

H1b: Senior management support has a positive influence on strategic sustainability orientation.

H1c: Employee motivation has a positive influence on strategic sustainability orientation.

In addition to internal drivers, external drivers can also have an important role in the formation of strategic sustainability orientation. This issue has been examined in previous studies. Delmas and Toffel (2004) showed that competitors, customers, governmental regulations and trading partners are the external drivers of an organization that create environmental-based strategies. Moreover, Tachizawa et al. (2015) introduced external drivers such as customers, society, suppliers, and local organizations as factors affecting the formation of environmental-based strategies. Kudlak (2017) introduced drivers such as brand image, the expectations of society, local organizations, and needs of the suppliers as external drivers for successful implementation of sustainability-based strategies.

Roehrich, Hoejmose, and Overland (2017) argue that external drivers, such as competitors, vendors, customers and existing rules and guidelines are effective in the functioning of sustainability strategies. They showed that increasing market share and reducing organizational costs are one of the consequences of sustainability strategies. Furthermore, Lee (2008) introduced drivers such as vendors, suppliers, and participation of governmental agencies as drivers affecting involvement of organizations in sustainable activities. In a research carried out by Teo et al. (2003), normative, mimetic, and coercive drivers were introduced as external drivers affecting the interaction of an organization with the environment. Liu et al. (2010) argue that external drivers such as normative, mimetic and coercive drivers are effective in the formation of orientation to sustainable supply chain management in organizations. Thus, according to the material presented, it is hypothesized that;

H2: External drivers have a positive impact on strategic sustainability orientation.

H2a: Mimetic pressures have a positive impact on strategic sustainability orientation.

H2b: Coercive pressures have a positive impact on strategic sustainability orientation.

H2c: Normative pressures have a positive impact on strategic sustainability orientation.

Norms, culture of the organization and inner activities of the organization are often influenced by the external environment that the company is facing. Most of the time, the survival, success and prosperity of a company depends on the dissemination of the culture and norms within the organization by senior management that is commensurate with the external environment of the organization (Gordon, 1991). Hence, when companies feel the pressure from the environment in different forms, they quite often react to these pressures. They change organizational structures and cultural norms to secure social legitimacy among key stakeholders (Rogers, Purdy, Safayeni, & Duimering, 2007). This suggests that the external environment affects internal environment and thinking of managers and employees.

Hanim Mohamad Zailani, Eltayeb, Hsu, and Choon Tan (2012) showed that external drivers of the company affect the internal strategies towards the environment applied by the organization. This means that laws, as external drivers, impact decisions made by managers and internal performance of the organization and, this issue is effective in the environmental performance of an organization. Mason (2007) showed that the external environment of organization has an impact on the strategies and decisions of top managers and this issue changes the internal environment of the organization. Moreover, Sheng and Chen (2010) showed that the external environment of an organization affects the decisions of the managers and the internal environment in observance of social responsibilities and paying attention to environmental issues. Thus, it is assumed that;

H3: External drivers have a positive influence on internal drivers.

Support and participation of top managers in sustainability strategies may depend on environmental conditions, since changes and environmental drivers are the cause of changes in the attitudes of employees and managers and this issue affects the formation of sustainable thinking among managers and employees (Cagliano et al., 2016; Chan et al., 2012; Green et al., 2012).

Feng, Li, Sun, and Wang (2013) suggest that the internal integration and coordination plays a mediating role in the relationship between external environmental factors and the performance of the organization. Internal integration and proper coordination between the internal components of organization can change the external drivers into operational performance in the organization. Thus, internal drivers can accelerate the creation of sustainable strategies in organizations that are based on external drivers.

H4: Internal drivers mediate the relationship between external drivers and strategic sustainability orientation.

### 3. Research method

#### 3.1. Sample and procedure

The statistical population in this study is all managers of food industry in Iran. According to the Iranian Food Industry Database, in general, the food industry of this country is divided into four segments; grain section (flour, peas, wheat, corn, lentils, etc.), dairy products (milk and its products),

meat industry (livestock, poultry, fish food, eggs, and canned food) sugar, and carbohydrates (sweets, chocolate, sweetened beverages, and concentrates). The representative sample includes 120 companies in the four categories mentioned above that were selected as companies operating in the food industry. It should be mentioned that these companies selected among suppliers, distributors and retailers it means that selected data include interrelationship data among business entity. Since sustainability is an important topic in supply chain, sustainability factors were examined in the selected companies. All the chosen companies in this study, have the certifications of ISO 9000, ISO 14000 and ISO 26000 certifications which are related to social responsibility. This suggests that all these companies have been active in the field of sustainability. Accordingly, on average, five top or middle-level managers were selected from each company. Therefore, the number of selected sample is estimated at around 475 people. Since this study is a questionnaire survey, the questionnaires were sent electronically throughout social networks to managers. In general, 600 questionnaires were sent and 475 of them were completed which were collected in 3 months. Characteristics of the respondents to the questionnaire are shown in Table 2.

### 3.2. Measurement

Table 3 shows a summary of measurement items according to scales widely applied in previous studies. External drivers are measured using three concepts of mimetic, coercive, and normative pressures. Mimetic pressures are measured with three questions and coercive and mimetic pressures are analyzed with five questions, respectively. These questions have been developed in all the three concepts of mimetic, coercive, and normative drivers based on studies of DiMaggio and Powell (1983), Teo et al. (2003), Delmas and Toffel (2004), and Liu et al. (2010).

On the other side, external drivers which include three parts of managerial attitude, top management support, and employee motivation have been measured based on previous studies. Managerial attitude is measured with four questions based on the studies of Sharma (2000) and Pagell and Gobeli (2009). Top management support is also measured with four questions which are based on the studies of Daily and Huang (2001) and Chen and Paulraj (2004). Moreover, employee motivation is measured with four questions based on the studies carried out by Hanna et al., (2000), Daily and Huang (2001), and Reed (2002). Strategic Sustainability Orientation is measured based on the studies of Defee et al. (2009), Pagell and Wu (2009) and Kroes and Ghosh (2010) according to three concepts of economy, environment and society each of which is measured with four questions. Generally, all questions are developed based on the five-point scale.

### 3.3. Measurement model

In this section, the data were analyzed based on Conformity Factor Analysis (CFA) and Cronbach's Alpha. In order to test the hypotheses and to validate the model, Structural Equation Modeling (SEM) was used considering the measurement model and the structural model. The data were analyzed with the aid of PLS and LISREL. Table 3 represents the absolute indices of measurement model. These indices show the characteristics of the model and its fitness (Byrne (2009); Hair, Anderson, Tatham, and Black (2005)). As shown in Table 3 and as recommended by Bagozzi and Yi (1988), the Analysis of Variance Extracted (AVE) is greater than 0.5. The Composite Reliability (CR) of the measurement model, as shown in Table 2, is above 0.7 which is recommended by Koufteros (1999). Considering the AVE and CR, the model has adequate convergent validity. The discriminant validity was verified by comparing the square root of the AVE for each construct and correlation level

**Table 2. Sample characteristics**

Demographic variable	Description
Average work experience	8 years
Gender	Male = 63% Female = 37%
Age	Median age = between 33 and 52 years Average = 36 years

**Table 3. Measurement items, standardized CFA factor loadings, average variance extracted (AVE), and composite reliabilities**

<b>Constructs and items</b>	<b>Factor loading</b>	<b>Composite reliability</b>	<b>AVE</b>	<b>Alpha</b>
<i>Mimetic pressures (MI)</i>		0.76	0.51	0.75
When our major competitors make economic initiatives, customers perceive them to be useful	0.64			
When our major competitors make environmental initiatives, customers perceive them to be useful	0.8			
When our major competitors make social initiatives, customers perceive them to be useful	0.71			
<i>Coercive pressures (CO)</i>		0.84	0.52	0.82
Governmental provisions demand us to comply with environmental protection	0.82			
Governmental provisions demand us to observe social justice	0.59			
Our major customers demand us to improve environmental functioning	0.59			
Our major customers demand us to improve social functioning	0.63			
Our parent company demands us to adopt social initiatives	0.92			
<i>Normative pressures (NO)</i>		0.88	0.55	0.83
Sustainable initiatives have been greatly affected by labor unions	0.75			
Sustainable initiatives have been greatly affected by trade associations	0.6			
Sustainable initiatives have been greatly affected by local communities	0.83			
Sustainable initiatives have been greatly affected by environmental interest groups	0.78			
Sustainable initiatives have been greatly affected by employees' suggestions	0.88			
<i>Managerial attitude (MA)</i>		0.85	0.58	0.84
Our senior managers believe that our company is likely to derive a benefit by implementing initiatives for productivity enhancements	0.74			
Our senior managers believe that environmental preservation is very important	0.85			
Our senior managers believe that social responsibility for strategic decision-making is of high priority	0.78			
Believe that it is important to improve the quality of life in respective local communities	0.69			
<i>Top management support (SU)</i>		0.83	0.55	0.81
Our senior managers support our efforts to improve the productivity of operations	0.64			
Our senior managers allocate adequate resources to environmental programs	0.81			

(Continued)

**Table 3. (Continued)**

Constructs and items	Factor loading	Composite reliability	AVE	Alpha
Our senior managers provide the resources we need in order to support employee development programs	0.83			
Our senior managers take part in local community outreach programs actively	0.69			
<i>Employee motivation (EM)</i>		0.88	0.66	0.88
Our senior managers award shop-floor employees for their improvement in productivity	0.59			
Our senior managers supports the efforts of shop-floor employees in order to reduce harmful environmental wastes	0.9			
Our senior managers motivate shop-floor employees to put forward suggestions which help reduce rework	0.84			
Our senior managers urge that shop-floor employees be involved in initiatives taken to improve the quality of life	0.89			
<i>Economic orientation (EC)</i>		0.84	0.59	0.81
Our company's mission fully considers the importance of financial performance	0.6			
Our company commits to the improvement of market share	0.43			
All of our employees know our financial priorities	0.96			
Our company employs the results of short-term productivity for operational decision-making	0.96			
<i>Environmental orientation (EN)</i>		0.83	0.56	0.83
Our company's mission fully considers the importance of environmental performance	0.7			
Our company commits to pollution control	0.59			
All of our employees know our ecological priorities	0.87			
Our company assesses the environmental effects of operational decisions	0.81			
<i>Social orientation (SO)</i>		0.84	0.57	0.84
Our company support social philanthropy dedicatedly	0.71			
Our company enhances social responsibility dedicatedly	0.87			
The value of social responsibility is clear to all of our employees	0.76			
Our company assesses social results of our operational decisions	0.68			

involving the constructs. Table 4 shows the square root of the AVE for each construct which is larger than the correlation level involving the constructs, which confirms the discriminant validity. The measurement model fit was assessed by evaluating absolute fit measures, including observed normed ( $\chi^2/df$ ), goodness-of-fit index (GFI) and root-mean-square error of approximation (RMSEA), and comparative fit index (CFI). As shown in Table 4, all fit indices met satisfactory levels (Table 5).

**Table 4. A factor correlation matrix with the square root of the AVE**

	NO	CO	MI	MA	EM	EC	EN	SO	SU	AVE
NO	1									0.83
CO	0.511	1								0.82
MI	0.587	0.357	1							0.75
MA	0.251	0.221	0.279	1						0.84
EM	0.264	0.202	0.433	0.736	1					0.88
EC	0.217	0.224	0.309	0.435	0.460	1				0.81
EN	0.447	0.272	0.336	0.698	0.640	0.528	1			0.83
SO	0.251	0.221	0.279	0.644	0.736	0.435	0.698	1		0.84
SU	0.284	0.192	0.359	0.751	0.808	0.495	0.685	0.755	1	0.81

**Table 5. Over-all fit indices of the CFA model**

Fit index	Scores	Recommended cut-off value
$\chi^2/df$	2.65	<2, <5
GFI	0.84	>0.90, >0.80
RMSEA	0.07	<0.08, <0.1
CFI	0.92	>0.90

### 3.4. Structural model

After validating the measurement model, the structural model is used to test hypotheses. In this study two structural models were investigated using PLS software. One of the models was used to investigate the main hypotheses and mediation test (H1, H2, H3, and H4) and the other was used to examine the sub-hypotheses. In the present study, the main hypotheses examined the direct effect of external and internal pressures on strategic sustainability orientation (H1, H2). The results of the study indicate that according to Table 6 the direct effect of external drivers on strategic sustainability orientation is not confirmed. But, the effect of internal drivers on strategic sustainability orientation was approved ( $p < 0.05$ ). The results also show that external drivers have an effect on internal drivers ( $p < 0.05$ ). On the whole, hypotheses H1 and H3 are confirmed and hypothesis H2 is rejected.

**Table 6. Structural parameter estimates**

Path	Hypotheses	Estimate	t-value	Result
Internal drivers (ID) → Strategic sustainability orientation (ST)	H1	0.854	10.98	Supported
External drivers (ED) → Strategic sustainability orientation (ST)	H2	0.088	1.8741	Not supported
External drivers (ED) → Internal drivers (ID)	H3	0.375	7.8614	Supported
Managerial attitude (MA) → Strategic sustainability orientation (ST)	H1a	0.536	8.3783	Supported
Top management support (SU) → Strategic sustainability orientation (ST)	H1b	0.271	6.6457	Supported
Employee motivation (EM) → Strategic sustainability orientation (ST)	H1c	0.101	1.815	Not supported
Mimetic pressures (MI) → Strategic sustainability orientation (ST)	H2a	0.035	1.1664	Not supported
Coercive pressures (CO) → Strategic sustainability orientation (ST)	H2b	0.008	0.3867	Not supported
Normative pressures (NO) → Strategic sustainability orientation (ST)	H2c	0.145	3.7587	Supported

Note:  $p < 0.05$ .

Furthermore, the mediating effect of internal drivers was studied in H4. The direct effect of external drivers on strategic sustainability orientation is not confirmed, but H1 and H3 are approved. Therefore, the indirect effect of external drivers on strategic sustainability orientation is confirmed. This means that the mediating role of internal drivers and H4 hypothesis are confirmed.

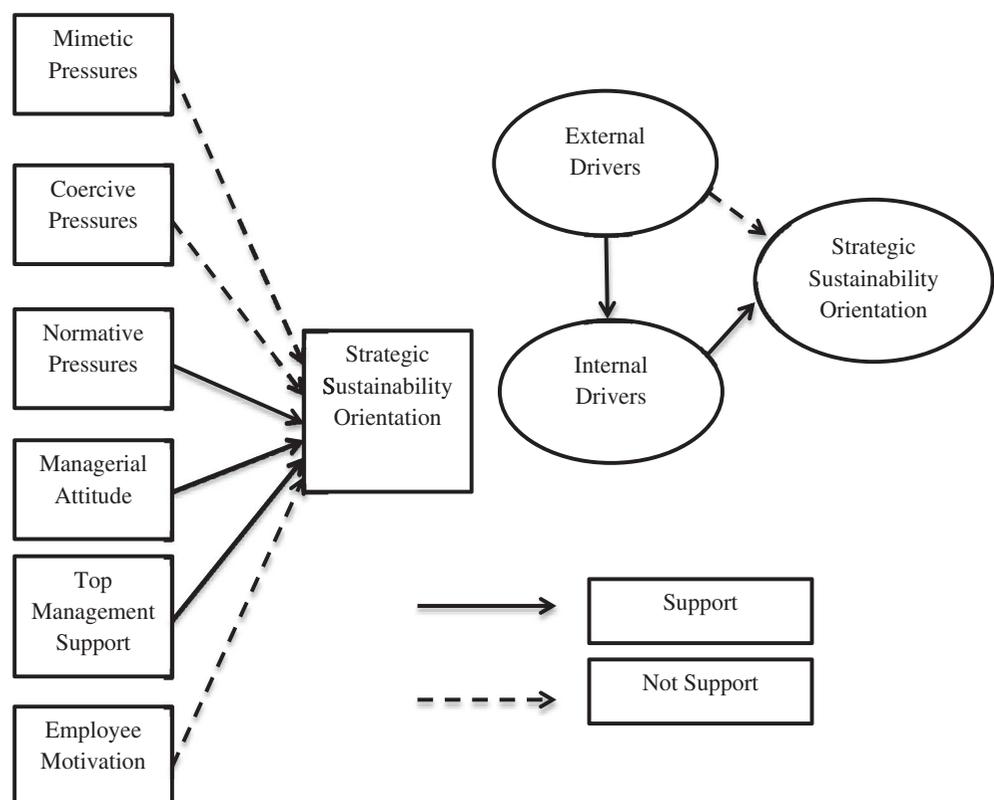
The results show that the attitudes of managers and senior managers' support have direct impact on strategic sustainability orientation. Hence, H1a and H1b are confirmed ( $p < 0.05$ ). Moreover, factors such as employee motivation, mimetic pressures, and coercive pressures have no direct impact on strategic sustainability orientation. Thus, hypotheses H1c, H2a, and H2b are not confirmed. It was also showed that normative pressures have a direct impact on strategic sustainability orientation. Therefore, hypothesis H2c is confirmed ( $p < 0.05$ ).

#### 4. Results and discussion

In this study, the role of external and internal environmental drivers on strategic decisions of an organization in the area of sustainability was examined. In fact, the role of environmental processes in the formation of sustainable thinking and strategic orientation towards sustainability was analyzed. The results are shown in Figure 3.

The results of this study indicate that managerial attitude has a direct effect on strategic sustainability orientation. Therefore, strategic measures taken by the organization to achieve sustainability in the environment depend on managers' thinking. These strategies might be employed in economic, social and environmental areas. The organizations making up a supply chain become aware of customer demands for products and services which are provided without causing damage to the environment and further the managers will make decisions that would support the integration and coordination of SCM practices throughout the supply chain (Vachon & Klassen, 2006, 2007).

Figure 3. Results.



Hence, when the managers believe that the movement towards sustainability and sustainability strategies leads the organization towards better performance and sustainable competitive advantages, sustainability concepts will be successfully implemented in green supply chain (Sen, 2009). In addition, creating change in an organization requires change of the attitudes of the managers. Omar, Davis-Sramek, Myers, and Mentzer (2012) set aside this approach and did an analysis on managerial level about the social procedure of changes towards a new situation, and they emphasized on the motivations of managers for undergoing change and their reactions during the procedure. In addition to customer requirements, environmental legislation and regulation have been identified as drivers of the adoption of sustainable practices (Preuss, 2002). Hence, conditions of the society will lead to the formation of sustainable thinking in management. Managers need to know that if they do not promote sustainable thinking throughout the supply chain, in the long run, they will be faced with many problems. Roxas and Coetzer (2012) demonstrated in their study that managerial attitude plays a major role in orientation towards sustainability. Furthermore, Cummings (2008) showed that managers and their mentality has a role in the development of sustainability strategies in countries, such as China and Indonesia. Thus, the results of this paper is consistent with previous studies.

In this study, we found that not only managerial attitude but also their support in the implementation of sustainability policies can contribute to strategic sustainability orientation in the supply chain. Implementation of sustainability measures in supply chain needs financial support, human resources, and applicable laws within the organization that must be prepared by management and applied throughout the organization. Tachizawa et al. (2015) denote the important role of coordination and supervision of top management in establishing proper functioning in the environment. This means that with top management support and the existence of other drivers of sustainability, coordination of environmental-related measures in the supply chain will increase. Hence, the role of top management and its support in providing organizational resources in developing and implementing sustainability strategies is undeniable. Andersson, Shivarajan, and Blau (2005) in their study investigate the role of senior management support of sustainability strategies. They believe that senior manager's support increases the commitment of the organization to sustainability and that support is a major drive for sustainability. Thus, the results of this paper complies with the results of previous studies.

The results also showed that employee motivation has no direct effect on strategic sustainability orientation. This indicates that employee motivation alone is not suitable for creating sustainability strategies. Rather, this must be accompanied by managers' thinking and their support of sustainability strategies. This could be due to bureaucracy conditions in the workplace of some factories in Iran, because the employees of an organization are not authorized enough to lead the organization towards sustainability. Without the support of senior managers, they do not have adequate capabilities to implement sustainable thinking in an organization. Moreover, if they act contrary to the thinking of managers they would face punishment or dismissal.

In this study, the role of internal drivers on the formation of sustainability strategies has been approved thus, internal drivers of the organization can coherently play a major role in the sustainable performance of supply chain. Therefore, it appears that in internal drivers of sustainability the role of management is more effective than that of the employees. Of course, creating appropriate thinking in management can also be effective in creating motivation in employees. Hanna et al. (2000) showed that employee participation is effective in environmental processes. However, they have also mentioned the subjects of management of operations and the support of managers in providing resources. Further, Im, Yang Woon, and Yang (2017) showed that employee participation alone cannot be effective on the organization's sustainability performance. Rather, if an organization takes appropriate strategies for its sustainability, employee participation can facilitate the move towards sustainability. Also, Kassinis and Soteriou (2003) state that employees can contribute to their organization's sustainability performance when they enjoy the organizational support, and the objectives and strategies of the organization supports them. This suggests that the results of this study are acceptable.

The role of mimetic pressures and coercive pressures in the creation of strategic sustainability orientation was also examined. The results showed that these two drivers are not effective in sustainability attitudes in the supply chain but, normative pressures are effective in strategic sustainability orientation. Thus, it is concluded that in Iran managers pay more attention to social norms.

It also appears that Iranian managers are more concerned about the structure of society and customers' mindset than they are concerned with competitors' performance and regulatory requirements. This might be due to lack of attention of legal entities to control the issue of sustainability or weakness of laws related to sustainability which cannot encourage managers to move towards sustainability. However, this can be studied in future researches. Generally, we found that external drivers alone cannot be effective in creating strategic thinking in supply chain. Moreover, the direct effect of external drivers on strategic sustainability orientation is not supported. However, we found that internal drivers mediate the relationship between external drivers and strategic sustainability orientation. In fact external drivers can contribute to the development of sustainability strategies in the supply chain when they change the thinking of managers and their support. If environmental drivers change the attitude of managers towards the issue of sustainability, there is hope that sustainability strategies will be implemented successfully. Thus, it seems that changing managers' thinking and increasing their attitudes towards society and the environment is the key to success in moving towards a sustainable supply chain. Feng et al. (2013) in their study mention the mediating role of internal coherence and coordination and state that sustainability drivers, once increasing internal coordination within the supply chain, can improve sustainable performance. In addition, we found that external drivers have direct effects on internal drivers, and this suggests that in the supply chain, managers and employees are influenced by the environment and react to changes. Therefore, any change in policies and legislation in the field of sustainability should be applied in such a way that changes the attitude of top management in supply chain.

## 5. Conclusion

The integration of sustainability issues into corporate mid-term and long-term goals demands that a careful balance be achieved between the needs of internal and external pressures. This is essential to maintain or improve corporate sustainability performance (Baumgartner & Rauter, 2017). Both external pressure and internal strengths and weaknesses need to be considered when attempting to integrate sustainable development issues into strategic planning (Eccles, Miller, & Serafaim, 2012). A corporate sustainability strategy integrates social and environmental dimensions into the strategic management process and highlights the strategic position of a company with regard to sustainable development (Baumgartner & Rauter, 2017).

From a theoretical viewpoint, this study contributes to the literature on the relationship between sustainable supply chain by contrasting the effect of the external and internal pressure using quantitative data. In this study, the issue of strategic sustainability orientation was examined based on both external and internal drivers. External and internal drivers were compared regarding their effects on sustainability strategies. The study showed that internal drivers are more important than external drivers in moving towards the concepts of sustainability in the supply chain. There are laws, government pressure, social pressure, and external drivers in environment but, the results of this study show that in Iran these drivers are not successfully implemented unless a change in the attitude of top managers is created. Furthermore, simultaneous approach to the issue of sustainability regarding internal and external drivers is another feature of this study because in most previous studies the issue of sustainability is studied from the perspective of environmental drivers (Baumgartner & Rauter, 2017).

Dividing these drivers into internal and external drivers was the main characteristic of this study that lead to different results. The results are summarized as follows:

- (A) Although environmental drivers play a role in the development of sustainability strategies, policy-makers and regulatory organizations must pay more attention to internal drivers.
- (B) Environmental rules and drivers should be designed in a way that top managers be convinced of the importance and necessity of sustainability concepts and be aware that if they resist sustainability thinking in the supply chain they will experience failure in no time.
- (C) Although this study rejects the direct effect of employee motivation on the formation of sustainable thinking, it proves that support of top managers and internal drivers, in general, are involved in the concept of sustainability, and the support of top managers of the issue of sustainability can have a role in motivating employees.

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#### Author details

Korosh Emamisaleh<sup>1</sup>

E-mail: [K.emamisaleh@gmail.com](mailto:K.emamisaleh@gmail.com)

Kamaleddin Rahmani<sup>1</sup>

E-mails: [kamaleddinrahmani@iaut.ac.ir](mailto:kamaleddinrahmani@iaut.ac.ir),

[kamaleddinrahmani110@gmail.com](mailto:kamaleddinrahmani110@gmail.com)

ORCID ID: <http://orcid.org/0000-0002-5119-0102>

<sup>1</sup> Department of Industrial Management, Tabriz Branch, Islamic Azad University, Tabriz, Iran.

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