



Original Research

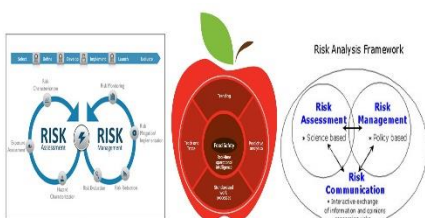
## Investigation of Risk Management in Food Industry

Amir Samimi<sup>1\*</sup>, Marzieh Samimi<sup>2</sup>

<sup>1</sup>Ph.D. of Science in Chemical Engineering, Process Engineer & Risk Specialist in Industries, Iran

<sup>2</sup>M.A in Agriculture Engineering, Food Engineer & Risk Specialist in Industries, Iran

### GRAPHICAL ABSTRACT



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### ABSTRACT

Risk assessment has been considered as a scientific method for preparing and developing food quality and health standards. In recent years, the word "risk" has been increasingly used in connection with food safety in general and with the health of food products in particular. This is due to the development of the use of the risk analysis system and the identification of critical control points of HACCP, which revolutionized the industries in the 1980s and 1990s. The first principle of the HACCP system stipulates that risk analysis must be performed. The hazards that are likely to occur should first be identified, and then the severity of each hazard and likelihood of the hazards will be assessed. These two factors (severity and probability of occurrence) are about the possibility of danger. Another point about the importance of risk assessment is the increase in international trade, which may raise new demands on food safety and quality. In the food supply cycle from farm to fork, food will always face countless risks that will lead to many problems for subsequent processes and end consumers. We all consume foods such as fruits, vegetables, dairy products, meat, and bread on a daily basis, and our health depends on the health and safety of these foods. These days, many countries seek for establishing a systematic management program for the food safety risk to be able to provide safe and healthy food.

## Introduction

Effective risk management means the systematic application of the management policies, procedures and processes related to risk analysis, assessment and control activities, which is a vital component of the control system. Unlike the traditional risk management, where each risk is managed individually, companies that use effective risk management must manage a wide range of risks in a coordinated manner [1-3]. The manager who takes responsibility for risk in an organization must be able to manage the manageable risks (external risk) and risks such as breaches of information (internal risk). Risk management in an organization is so important that without it, an organization cannot achieve its future goals [4-7]. The first step in this is to set up a risk profile. Risk profile management helps risk managers to have a thorough assessment of the risk to food safety potential and determines a clear status of food safety risk. Risk profile is often considered as a suitable model for prioritizing food safety and determines whether risk assessment is needed in principle and whether the problem created in the field of food safety can be resolved quickly or not [8]. Risk management seeks to identify, evaluate, and measure risks; then take countermeasures to manage them, not eliminate them [9-11]. Due to the great importance of the mentioned issues, no research has been conducted in the country that has examined the implementation of organizational risk management and introduced its general framework [12-15].

Despite numerous studies on different approaches to risk management in the world and studies on how to implement risk management and its relationship with organizational performance and despite the undeniable importance of organizational risk management and its contrast with traditional risk management (SRM), domestic researchers have shown little attention to the issue and have not examined how to implement risk management and its implementation in various organizations. This study intends to introduce and implement risk management (in the phase of identification, analysis and evaluation) in the food industry in Iran [16-18].



**Figure 1:** Anticipating Food Safety Risks - Food Safety Magazine

## Common Methods of Controlling Physical Hazards

In the food supply cycle from farm to fork, food will always face countless risks that will lead to many problems for subsequent processes and end consumers. The issue of success in launching a new product is an important issue for managers. Methods of controlling physical hazards in food include

careful inspection of raw materials, control of all certificates before delivery of raw materials [19-21]. Depending on the nature of the physical hazards, different methods and equipment may be used. Ensuring food safety to maintain public health as well as economic development is one of the major challenges in developed and developing countries. There have been many advances in food safety systems in recent decades [22-25]. One of these modern systems for food safety is the risk analysis process, which is a process based entirely on science and comprehensive risk analysis. This method is a set of measures that, if implemented and fully realized, includes a developed system of expertise and skills in the field of food management and food safety [26].

### **Main Problems and Obstacles of Production in Food Industry**

**Liquidity:** The raw materials of the industry are seasonal products, in a specific and short time, all the required amount must be purchased in cash from farmers who are not willing to sell in installments and on credit.

**Equipment:** It can be seen in many food industry units from the oldest machines to the newest ones. In many of these units, which are old and even semi-automatic machines, not only the efficiency is not good but also the high cost of repairs is always imposed [27].

**Management:** With the youth of the country's food industry in this field, still there are problems in some units [28].



**Figure 2:** Food safety-risk analysis

**Regulatory instability:** Another problem and obstacle of the food industry is that the rules and regulations in various fields, especially currency issues, are unstable, and the issuance of multiple and sometimes contradictory sections makes planning in the food industry difficult and in some cases impossible [29].

### **General Cases of Food Safety Risk Analysis**

Risk analysis should be done continuously, transparently and with sound and scientific evidence. If new information and research is obtained, the analysis should be re-examined and evaluated.

### **Risk analysis components should be fully and systematically written**

**Organizational risk management:** Over the past two decades, organizational risk management has grown rapidly in organizations and shareholders, legislators, professional bodies and rating agencies to better manage corporate affairs from risk management and Use internal controls. Organizational risk management is a relatively new phenomenon and a number of studies are

still trying to examine how risk managers affect the processing of decisions in the organization. But what is organizational risk management? Dickinson (2001) states that organizational risk management is a systematic and integrated approach to managing the total risks that a company faces [30].

Verbrog et al. (2003) state that organizational risk management is the effort to manage all corporate risks; In fact, organizational risk management has a structural responsibility that helps management achieve its goal - which is to maximize the value of the company's assets [31].

Noko and Stolls (2006) state that organizational risk management is a method in which all risks are viewed in a coordinated and strategic framework [32].

Wu et al. (2015) consider organizational risk management as an integrated approach to managing the risks in an organization, which seeks the most effective ways to deal with these risks [33].

According to Al-Amri and Davidow (2016), organizational risk management can be considered as a process of corporate risk management in which both financial and non-financial risks such as operational risks and strategic risks are managed in an integrated manner [34].

To be. Finally, according to the definition of Insurance and Risk Management Association (2011), organizational risk management is a strategic discipline of the business that supports the achievement of organizational

goals by addressing the full range of risks and managing the effects of those risks [35].

Company value and organizational risk management: In terms of maximizing company value, it is not clear why companies should manage risk; because risk coverage and implementation of risk controls can be costly and limit many profitability opportunities, these costs naturally reduce the value of the company. The corporate risk management literature explains why companies manage risk. Smithson and Simkins (2005) reviewed the empirical literature on risk management and firm value and concluded that there is limited evidence that risk management increases firm value. Noko and Stolls (2006) stated that successful companies in creating an effective organizational risk management program have gained a long-term competitive advantage over companies that manage risks individually (traditional risk management) [36].



**Figure 3:** Food safety

There is conflicting evidence on the impact of organizational risk management on firm value.

Identity and Leibenberg (2011) identified a statistically and economically significant increase in firm value for firms that implemented organizational risk management programs; But Lane, Wen, and Yu (2012) found a negative correlation between corporate risk management and corporate value in a study of corporate risk management in the insurance industry in the United States [37].

Makshin, Nayr, and Rostamberkov (2011) found a positive relationship between firm value and enhanced traditional risk management using corporate risk management rankings by S&P; but they did not see a further increase in firm value for firms that achieved higher organizational risk management ratings [38].

Grace, Lorty, Phillips, and Shimpi (2015) found that corporate risk management improves corporate performance based on a survey of risk management practices in the insurance industry; Performance that includes higher cost efficiency, revenue efficiency and asset returns. Lane et al. (2012) found that the market reacts negatively to organizational risk management [39].

Overseas risk management studies have examined the effects and relationship of risk management with other variables [40]. In-house research has been conducted in this field that has examined most of the general field of risk management and its relationship with company performance; Hosseini, Hosseini and Seyed Motahari (2014) showed that the use of firm risk management

techniques has a significant positive relationship with organizational performance [41]. The results of Tari Verdi and Damchi Jalodar (2012) show that two variables of risk management factors, namely industry competition and firm size, have a positive relationship with firm performance. In contrast, the other two variables of risk management factors, namely, environmental uncertainty and board oversight, are not related to firm performance. In addition, in general, risk management is not related to firm performance [42].

A review of previous research in the study of Khodamipour and Mahroomi (2016) shows that in most experimental studies, the presence of a senior risk manager is a sign of organizational risk management in institutions, characteristics such as size and institutional ownership of companies have a positive and significant relationship with Implementation of organizational risk management has a positive effect on shareholder value and company performance in undertaking organizational risk management [43].

The results of Askernejadnori and Moghani (2017) research show that effective risk management has a positive effect on the rate of return on assets and the growth of the company's market value [44].

Abroad, extensive studies have been conducted in the form of the basis of organizational risk management and its effects on the overall performance of the organization. In general, the empirical

literature on organizational risk management is classified into three main areas: The first area relates to the implementation of organizational risk management using surveys, questionnaires, or interviews.

The second area of the literature focuses on the determinants of organizational risk management and the third area has studied the relationship between organizational risk management activities and company stock value based on various empirical data. Wu et al. (2015) have presented the organizational risk management literature using management science approaches. Al-Amri and Davidow (2016) found that managing organizational risk reduces both the likelihood of occurrence and the impact of operational risks.

Eccles, Identity, and Miller (2014) found that companies that implement organizational risk management experience a reduction in stock volatility. Oliva (2016) provides a model for organizational risk analysis in the supply chain of large Brazilian companies. Fraser and Simkins (2010) found that the management of Hydro One feels that the company, after implementing organizational risk management, is in a better position than five years ago and is ready to respond to new developments in the favorable and unfavorable business environment. The results of Meadel and Carbo (2016) showed that the structure of risk technologies over time changes the performance of organizational risk management in decision making.

The findings of Lechner and Gatzert (2017) show that size, international diversity and industry sector (banking, insurance and energy) have a positive effect on the implementation of organizational risk management system and financial leverage has a negative relationship with organizational risk management. In addition, the results showed that organizational risk management has positive and significant effects on stock value.

### **Microbial Risk Management (MRM)**

Diseases that originate from microbial agents in food are always important in terms of public health around the world. The incidence of such diseases has increased in some parts of the world and has been created for various reasons. The main reasons are: microbial resistance and adaptation, changes in food production systems, new methods of animal feed, changes in livestock farming, agricultural operations and food technology, increasing global trade.

The globalization of food markets has also increased the challenges of managing such risks. Technically, the effective management of risks related to microbial hazards in food is a complex process. Recently, the method of risk analysis and all other related components it includes: risk assessment, risk management and communication of risk components as a new achievement in the assessment and control of microbial risk in order to help the health of consumers and ensure the health of products in the food business.

Microbial risk management of an organization. It is the national and international body responsible for microbial risk management (MRM). In the microbial risk management process, the appropriate level of protection is a key concept and a reflection of the national food safety goals set by the competent and competent authorities of the country in the disease is expressed by food origin.

### Conclusion

Effective risk management is one of the main strategies that can play a role in improving business performance. The goal of any activity in any business unit is to achieve the highest level of effectiveness and efficiency, which is called performance. Financial performance is the measurement of the results of a company's policies and operations in monetary terms. Risk management based on ISO31000 requirements includes identification, analysis, risk prioritization and finally definition of related projects to reduce or eliminate identified risks in the process. In fact, like many quality management topics after identifying improvement projects that result from identifying risk consequences, the organization's top managers to improve their organization processes in order to demonstrate their commitment to the system by injecting resources and balancing limited conditions and unlimited demands. They put their agenda. In the food supply cycle from farm to fork, food will always face innumerable risks that will lead to many

problems for subsequent processes and end consumers.

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