

Evaluation of the Critical Success Factors of the Food Safety Management System According to ISO 22000:2018: A Case Study in The State Company for Iraqi Food Products

By,

Dr. Nagham Ali Jasim

**College of Administration and Economics/
University Of Al -Mustansiriya**

Manar A. Suhail

Al-Nisour University College/Iraq

ABSTRACT

The paper aims to evaluate the critical success factors for the implementation of the food safety management system in accordance with the international standard (ISO 22000:2018) and analyze the gap between the actual reality in the Abu Ghraib dairy factories and the critical success factors that help implement the food safety management system. The international standard (ISO 22000:2018) has been divided according to the checklists into two types of critical success factors, the internal factors (leadership, training, performance evaluation, planning, financial resources) and external factors (organization context, risks and opportunities, stakeholders, support), The research relied on the case study approach, and the weighted arithmetic mean and percentage of application and documentation were used to express the extent of the difference and congruence with the critical success factors derived from the standard, The most important results reached by the researcher were that the percentage of applying and documenting these factors amounted to (46.7%), while the percentage of the gap amounted to (53.3%).

Keywords:

Critical Success Factors, Food Safety Management (FSMS), International Standard, ISO 22000:2018.

1. Introduction

Both consumers and companies operating in the food industry are concerned with food safety as a result of the risks that food may transmit to consumers. A food safety management system provides an effective framework for managing an organization's responsibility for the safety of food provided to its customers. Over the past few decades, the food supply chain has

become a complex structure. It is highly controlled within food companies, since mistakes on a small scale can lead to food poisoning risks, so food industry organizations have resorted to adopting management systems that help manage food safety. However, these systems need factors that help them reach Which is the ideal application and the provision of ways to success, and the research included the study methodology and some previous studies and addressed the critical success factors and the food safety management system according to the international standard (ISO 22000:2018) in the Abu Ghraib dairy factories and discussed the results, conclusions and recommendations proposed for the development of factors Critical success in factories.

2. Research methodology

2.1. Research problem

The food industries are one of the most complex industries as they are manufactures that have direct interaction with the human being and may negatively affect his life and health when intentional or unintended non-conformities occur. The General Company for Food Products / Abu Ghraib Factories is a pioneer and well-known in the local market. Food safety management according to the division of critical success factors and their fragmentation into internal and external factors based on the study (Monge-Mora et al.,2020), which relied on (9) critical factors for success, the internal factors are (leadership, training, performance evaluation, planning, Financial) and external factors are (the context of the organization, risks and opportunities, stakeholders, support), and the research problem can be expressed by the following questions:

1- What is the possibility of implementing a food safety management system in Abu Ghraib dairy factories in accordance with

the requirements of the international standard (ISO 22000:2018)?

2- What is the gap between the actual performance of the Abu Ghraib dairy factories and the requirements of the international standard (ISO 22000:2018)?

3- What are the external threats and weaknesses that prevent the application of the international standard (ISO 22000:2018) in the factory?

4- What are the critical success factors that facilitate the implementation and

application of the international standard for food management system?

5- What is the possibility of developing appropriate procedures and mechanisms to adopt the application of the standard and use critical success factors in addressing the gap between the actual reality and the requirements of the food safety management system according to the international standard (ISO 22000:2018)?

2.2. Research significance

The importance of the research topic is derived from the importance of the issue of food safety management and accuracy in achieving conformity and not allowing the presence of serious mistakes and defects, and thus ensuring the delivery of an identical product to customers and consumers. Therefore, food industries are among the industries in which mistake is not accepted, and focus on the right work from the first time. It is also adopted by the modern philosophy, which contributes to reducing defects to minimum levels that are almost zero, which leads to reducing production costs, and that the application of the international standard for food safety management leads the organization to reach its goals, on top of which is achieving permanent customer satisfaction, and this needs to identify critical success factors that contribute to achieving the desired goals of implementing the system.

2.3. Research objectives

The application of the international standard is an administrative and strategic decision that contributes to achieving goals by enhancing critical success factors. Therefore, the research seeks to achieve the following objectives:

1. Determining the level of application and the gap between the reality of the actual system in factories with the requirements of the standard (ISO 22000:2018).
2. Determining the critical success factors that will help increase the effectiveness and efficiency of the application of the system.
3. Presenting suggested procedures and mechanisms commensurate with the work of dairy factories in providing a product that meets the requirements and desires of customers.

Implementation of the international standard will contribute to responding more quickly and efficiently to problems that may endanger food safety, thus helping it to stop potential contamination before it occurs.

2.4. Research boundaries

1. Spatial boundaries: The spatial boundaries of this research are represented by the State Company for Food Products as a research community and the Abu Ghraib dairy factories, which is located in the Abu Ghraib district as a sample for research.
2. Temporal limits: The time period of the research, which the researcher conducted a field coexistence within the Abu Ghraib factories to see the availability of critical success factors that help to implement the food safety management system from the date of 10/3/2021.
3. Scientific limits: studying the actual reality of food safety management in Abu Ghraib dairy factories and knowing the extent to which critical success factors can be identified and evaluated, which help to apply the requirements of the international standard (ISO 22000:2018) in these factories, and identify the gaps between the actual reality and the requirements of those emerging factors. One of the specification items and focus on urging the senior management and workers in the factory to work and cooperate in order to reach the full implementation and obtain the international standard certificate to maintain the safety of food products, which is reflected on the company's competitive position and its share in the local markets.

Some previous studies

The First study: (Kok, 2009)

Study Title:

Application of Food Safety Management System (ISO 22000/HACCP) in the Turkish Poultry Industry

The study sample:

A number of Turkish poultry meat production company

Analysis Method:

A comparative study

The Study Problem:

Poultry meat is one of the major products that cause foodborne infections due to its susceptibility to pathogens as well as physical and chemical contamination.

Purpose of the Study:

Determining the extent of Food Safety Management Systems (ISO 22000 / HACCP) for implementation in the Turkish poultry industry.

The most Prominent Results:

There is a gap in the allocation of resources for the implementation of food safety systems. HACCP will only occur when there is sufficient full and routine education and training of management and staff in

understanding the meaning and function of the organization may have specific critical success factors aimed at filling The gap and improving its competitive position relative to other organizations in its industry (Caralli, 2004: 18).The tendency to create successful alliances with competitors is one of the most important critical success factors, and (Agricultural Adaptation Council, 2005) pointed out that when critical success factors exist within an alliance, it seeks to create high levels From the value the consumer recognizes and satisfies with to increase the likelihood of success of the alliance (Gooch, 2005: 16). An organization's critical success factors may remain fairly constant, and only be adjusted when the organization makes major changes, such as changing its mission or the industry in which it competes (Al-Khafaji, 2018: 22). However, each organization may face temporary circumstances or situations that must be managed for a specific period of time, while still maintaining its performance in all other areas. These temporary conditions or situations can give rise to CSFs which are areas in which an organization must temporarily perform satisfactorily to ensure that it does not impede its ability to accomplish its mission (Caralli, 2004:19). For example, the following conditions can create temporary CSFs, and as shown in Figure (1).

Each managerial function has a general set of associated critical success factors and managers have different areas of focus and priorities depending on the level of management at which they work (Bullen & Rockart, 1981: 16). Critical success factors may reflect the type of responsibilities that a manager's position in the organization entails. For example, Executive Managers may have critical success factors that focus on risk management, while managers of operational units may have critical success factors that address production control or Cost control (Caralli, 2004:21).

As for distinguishing the critical success factors more specifically through the dimension in which they are internal or external to a particular organization or unit in which they are applied, and it can be said that the internal critical success factors are those that fall within the manager's control, in contrast, the external critical success factors are those that control The manager is very limited (Al-Maliki, 2010: 60), and identifying critical success factors as internal or external is important because it

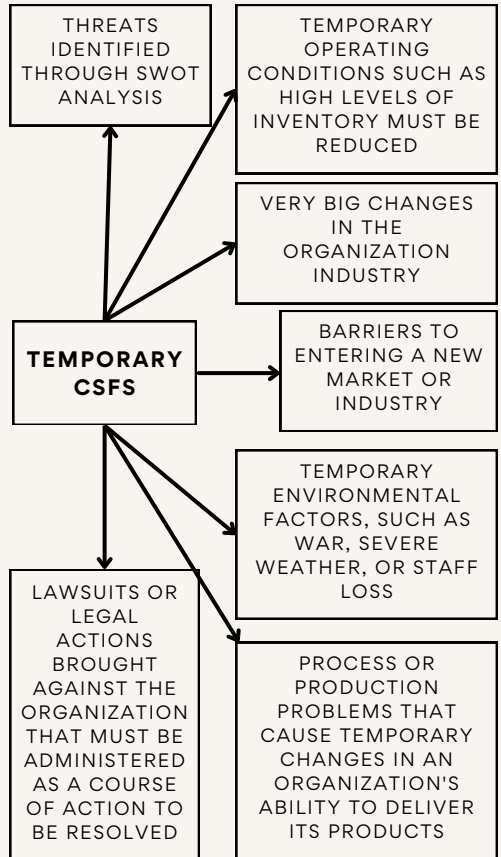


Figure (1). Prepared by the Researcher

provides better insight for managers in setting goals. For example, a manager can set highly specific and achievable goals that complement the achievement of internal CSFs that aim to minimize any impact on operations that may result from CSFs not under his direct control (Caralli, 2004:22-23). Managers deal with internal and external factors, control of human resources within the organization and inventory control, that is, matters that are within the sphere of influence of management and external critical success factors, for example, the price of a certain critical raw material and so on (Bullen & Rockart, 1981: 17).

The relationship between goals and critical success factors, critical success factors are often confused with organizational goals. Therefore, goals and CSFs go hand in hand, and both are necessary to accomplish the mission of the organization, since both are

HACCP, the proper and continuous application of its principles and the importance of control over food transported.

The second study: (Goddard et al., 2018)

Study Title:

Food Integrity and Food Technology Concerns in Canada

The study sample:

A number of Canadian companies

Analysis Method:

exploratory study

The Study Problem:

Food safety and food technology both generate public concerns, and there is little research to show the interactions between them especially in Canada.

Purpose of the Study:

Examined a range of food safety concerns, genetic modification in food, and food nanotechnology concerns when used by a Canadian customer.

The most Prominent Results:

That science and technology are keys to alleviating concerns about food safety and increases in the level of variables, specifically agents, government, industry, and researchers, may reduce food safety concerns.

The third study: (Zimon et al., 2020)

Study Title:

Development of Key Processes along the Supply Chain by Implementing the ISO 22000 Standard

The study sample:

A number of organizations in European countries

Analysis Method:

A comparative study

The Study Problem:

ISO 22000 specifies requirements for the development of an effective food safety management system for organizations that contribute to the supply chain and there is a sense of need to demonstrate their ability to control threats and risks especially those affecting food safety.

Purpose of the Study:

The study aims to show whether the implementation of the requirements of the ISO 22000 standard in the food supply chain can support the implementation of the main processes that occur in it, and thus increase the level of food quality and reduce its waste.

The most Prominent Results:

The implementation of the ISO 22000

standard along food supply chains can positively affect the implementation of key processes and thus contribute to reducing food waste at every stage of the supply chain.

3. Theoretical framework

3.1. The concept of critical success factors (CSFs)

Critical success factors are the areas through which the organization seeks to achieve outstanding performance, and the first to put forward this concept was (Daniel: 1961) in his research, which discussed the management information crisis, in which he indicated the need to abandon issues that are not directly related to the success of the organization in its operations. (Al-Atabi, 2014: 212), and the idea was developed after him (Rocket: 1981) and it was applied in 1995 by James Johnson and Friesen to many sectors, including the health sector (Al-Dardsawi, 2010: 8) and identified by (Wheelen & Hunger: 2006) 20% of the critical factors can determine 80% of the organization's performance, and top management plays an active role in identifying critical success factors and developing systems and programs commensurate with those factors that can be used by managers and organizations to help achieve high performance and ensure that The resources that fall within their competence are directed towards important areas (Sabri, 2010: 13-15), and these factors differ from one organization to another according to the activity of that organization, its size and the way it performs its work (Al-Maliki, 2010:55), and it also depends on the organization's structure, competitive strategy and its Industrial and geographical location (Alharthi,2014:34).

Researchers have differed in determining the number of sources of critical success factors. They were considered (Rockart & Bullen: 1981) as five sources, and others considered them more or less than that, because the elements of success are found at all levels of the organization, the upper, middle and lower levels, which illustrate the aspects of challenges and opportunities facing management (Al-Atbi, 2014: 213) (Al-Khafaji, 2018: 24) and the external factors that affect the achievement of its goals in order to work on following up and monitoring them as far as the organization is concerned (Bullen & Rockart, 1981:15).

an integral part of the organization's strategic plan. It is also possible that goals sometimes resemble CSFs because they embody the importance of the organization's key performance area as the CSF associated with more than one objective (Caralli, 2004:12-14).

3.2. ISO 22000:2018 standard

The International Standard (ISO 22000:2018) is a food safety management system that includes requirements for food chain organizations. The system translates food safety management into a process that is constantly improved. This standard focuses on a preventive approach to food safety including the identification, prevention and reduction of food safety risks in the food chain and feed (Agus et al., 2020:14057) This standard applies to all food and feed manufacturing organizations, regardless of size or sector. Food industry organizations and accompanying food services that provide meals for immediate consumption in a specific place, and include full-service restaurants, fast food restaurants, cafeterias, food trucks, and other places that prepare food, present it and sell it to customers for profit, and some are served in hotels Recreational facilities, shopping centers and retail stores (Rai & Bai, 2018:5), with regard to food-borne diseases or substances that are toxic in nature, caused by bacteria, and the entry of viruses, parasites or chemicals into the body through contaminated food or water (Lee et al., 2021:4) and according to (ISO 22000, 2018:4), food safety is defined as the assurance that food will not cause an adverse health effect for the consumer when it is prepared and/or consumed in accordance with its intended use. The Food and Agriculture Organization (FAO) has stated, "If food is not safe, it is not food. We cannot hope to end hunger and create a world without this basic building block." So, in 2004, 160 countries voted in The United Nations (UN) to make food a human right, not a commodity (Doumeizel & Clegg, 2019:8).

The increase in threats to human life has made most international organizations adopt standard specifications for food safety management to reduce these risks.

The World Health Organization's 1996 report on the role of food safety in health and development stated the following: "It is no longer sufficient for food to be available in sufficient quantity or to contain

nutritional content adequate to the body's needs, but it must also be safe for consumption and not endanger the health of the consumer through infection, contamination or poisoning" (Muhammed, 2019: 11), so it was necessary for international organizations to put in place strict systems to prevent major accidents, so the application of different food safety management systems is essential to achieving food safety.

The International Organization for Standardization (ISO) issued the first edition of the international standard in 2005 and ISO is an independent international non-governmental organization with membership of 167 national standards bodies as of the date of writing this research, through its members, brings together experts to exchange knowledge and develop existing voluntary international standards Consensus and relevant to the market that supports innovation and provides solutions to global challenges (Official site Of ISO).

The set of international standards (ISO 22000) issued by the International Organization for Standardization (ISO) in 2005 is the result of a series of developments and the accumulation of experience as a result of implementing the recommendations of the Codex Alimentarius Commission issued in 1993 and known as HACCP (Shaheen, 2019: 119). (Selamat & Hassan, 1998) explained that the term HACCP refers to the initial letters of the English expression Hazard Analysis and Critical Control Points, which is an international standard for food industries and its application aims to ensure the safety of manufactured food products from any risks that the customer may be exposed to as a result of taking these Products (Al-Rebeawi, 2007: 79), and this standard has been very popular in its use, and most organizations related to food have raced to apply it, either voluntarily or through the pressures of legislation and laws in their countries.

The relationship of the standard (ISO 22000:2018) to PDCA is based on what is known as the "Shewhart Cycle for Continuous Improvement (Baliyah, 2019: 78), which is a common methodology used to guide problem identification and resolution. The PDCA cycle describes the sequence used to solve problems and improve quality continuously over time (Swink et al., 2020:184).

We note that the modern specification structure relied on the Deming methodology for continuous improvement, and the management specification structure was built according to this methodology. In this specification, and as shown in Figure (2), the process approach uses the concept of PDCA cycle on two levels. The first covers the general framework of the FSMS (clause 4 to clause 7 and clause 9 to clause 10), and the other level (operational planning and control) covers the operational processes within the food safety system as described in clause (8). Therefore, communication between the two levels is necessary (ISO 22000,2018: vii).

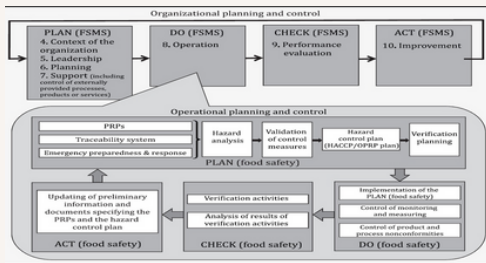


Figure (2) Illustration of the Plan-Do-Check-Act cycle at the two levels
 Source: ISO. (2018). ISO 22000:2018. En Iso 22000:2018, Ver.2: viiii.

Understanding and analyzing critical success factors in the implementation of (ISO 22000) is extremely important, and we have shown that success factors are indicators of opportunities, activities, or conditions required to achieve a goal within a project or task. (353Monge-Mora et al., 2020): Nine essential factors for the successful implementation of (ISO 22000), which can be divided between internal and external factors and as shown in Table (1).

EXTERNAL FACTORS	INTERNAL FACTORS
Context of the organization	Leadership
Risk and opportunities	Staff training
Stakeholders	Performance evaluation
Support	Planning
	Financial resources

Table (1) Main Critical Success Factors for Implementation of (ISO 22000)

4. The checklist

Diagnosis and analysis of the reality of critical success factors in Abu Ghraib dairy factories according to the international standard ISO 22000:2018

In this topic, we will focus on diagnosing the gap between the critical success factors according to the food safety management system and the actual performance of the factory, using one of the data collection methods, which is the check lists to diagnose the gap for each of the critical success factors, knowing that the factory did not obtain a certificate of conformity according to The international standard (ISO 22000:2018), but it has a certificate of conformity according to the international standard (ISO 9001:2015), and accordingly, the checklists and interviews with stakeholders as well as personal notes will be used to collect accurate information that contributes to assessing the extent of the application of critical success factors that will eventually lead To a smooth application of the International Standard (ISO 22000:2018). And through the use of the heptagonal scale as in Table (2) and includes seven weights from (0) the lowest weight to (6) the highest weight.

S	Heptagonal Scale Items	weight (degree)
1	fully applied and fully documented	6
2	fully applied and partially documented	5
3	fully applied and undocumented	4
4	Partially applied and fully documented	3
5	Partially Applied and Partially Documented	2
6	Partially Applied and undocumented	1
7	Not applicable and undocumented	0

Table (2) Heptagonal Likert Scale
 Source: Al-Khatib, Samir Kamel, "Total Quality Management", Contemporary Introduction, Library of Egypt and Dar Al-Murtada, Baghdad, Iraq, 2008: 326

4.1. Discuss the results.

Through the results of the used checklists and as tabulated in Table (3), we can

calculate the total rate and the total percentage of applying and documenting critical success factors according to the International Standard for Food Safety Management (ISO 22000:2018) in Abu Ghraib dairy factories and by using the following mathematical equations : (Al-Musawi,2020: 115-116)

- 1.Highest weight in the list = The number of checklists X Assumed grand total for complete application and documentation.
- 2.Gap Amount in Application and Documentation Total Requirements = Assumed Total of full application and Documentation - The sum total of the evaluation results.
- 3.The ratio of the total actual results to the total assumed results = the total sum of the evaluation results ÷ Assumed total sum of full application and documentation.
- 4.Percentage of the gap in the application and documentation of the International Standard = 100% -the percentage of the total actual results.

Critical Success Factor	Weighted mean (average)	Percentage of application and documentation	Gap size for critical factor
Leadership	2.7	45%	55%
Training	4.4	73.3%	26.7%
Performance Evaluation	2.4	40%	60%
Planning	2.6	43.3%	56.7%
Financial Resources	2.6	43.3%	56.7%
Organizational Context	1.6	26.7%	73.3%
Risks and Opportunities	1.8	30%	70%
Stakeholders	3.7	61.7%	38.3%
Support	3.4	56.7%	43.3%
The sum total of the evaluation results	25.2	420.00	
Maximum application and documentation	6	100%	
Assumed total sum of full application and documentation			54
The amount of the gap in the application and documentation of the total factors			28.8
The ratio of the total actual results to the total assumed results			46.7%
Percentage of the gap in the application and documentation of critical success factors			53.3%

Table (3) The results of the checklists for evaluating critical success factors according to the international standard ISO (22000:2018) in Abu Ghraib dairy factories.

The results of Table (3), it appears that the percentage of applying and documenting the critical success factors of the food safety management system in Abu Ghraib dairy factories was (46.7%) based on the requirements of the international standard (ISO 22000:2018).

It was found that there is a gap between the critical success factors and the extent of Its application, which was (53.3%), noting that the factory did not currently apply the international standard (ISO 22000:2018) and the quality management system is applied in accordance with the international standard (ISO 9001:2015), and this contributed to the presence of some critical success factors common between the two standards, which facilitates Dairy factories should adopt the standard (ISO 22000:2018) due to the presence of many participants, and the critical success factor “training” was the least of the gaps, as the percentage of application and documentation of this factor reached (73.3%), which is the highest percentage of application and documentation among the rest of the factors and this is a return as we mentioned above for the application of factories The quality management system, which is concerned with training activity, and that the gap ratio reached (26.7%), and this is due to the lack of focus in the training programs for the food safety management system, while the critical success factor “stakeholders” came with the second highest percentage of application and documentation, which amounted to (61.7%).

This is also due to the factories identifying the parties they deal with (stakeholders) and that the gap that reached (38.3%) was due to the lack of focus on other additional bodies related to the food safety management system, and the critical success factor “performance evaluation” ranked third in terms of application and documentation As the percentage reached (56.7%), and the gap reached (43.3%), and this is also due to the presence of the supporting processes, but it needs to be fully directed to support the food safety management system.

As for the rest of the factors, the percentages were less than (50%), so the critical success factor “leadership” came in the rank. The fourth in terms of percentages, which amounted to (45%) as the percentage of application and documentation, while the percentage of the

gap was (55%), and this is due to the lack of planning by the top management to adopt the application of the food safety management standard according to (ISO 22000:2018), while the percentage of application and documentation for The tow success factors "planning" and "financial resources" (43.3%) and the gap was (56.7%), then the success factor "risks and opportunities", which was applied and documented (30%), while the gap was (70%) and the success factor is considered "context The organization" is the largest of these gaps and the least applied and documented factors, as the percentage of application and documentation reached (26.7%), and the percentage of The gap is (73.3%), and we can illustrate the percentages of application and documentation of critical factors in the graph as shown in Figure (3).

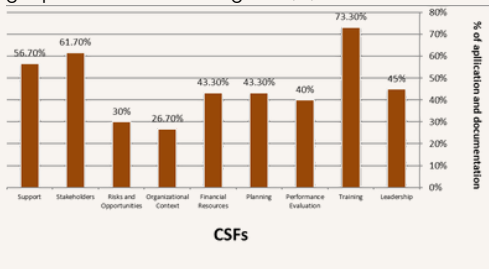


Figure (3) Chart of percentages of application and documentation of CSFs according to the international standard (ISO 22000:2018)

5. Conclusions and recommendations

5.1. Conclusions

1. Classifying the success factors into internal and external that provide a better view of the top management in the Abu Ghraib dairy factories, since the internal factors are under the control of the organization and the external factors are not under its control, and therefore we will ensure focus on each of the strengths and weaknesses generated internally and the opportunities and threats affecting the organization externally, as The percentage of the gap in the application and documentation of internal CSFs was (51.02%), while the percentage of the gap in the application and documentation of external CSFs was (56.23%).

2. Abu Ghraib dairy factories did not apply the international standard (ISO 22000:2018) for the food safety

management system, knowing that the factories have a certificate of conformity for the quality management system according to the international standard (ISO 9001:2015).

3. Although there are documented commitments to the top management (the leadership) that pertain to the work of factories, these commitments did not focus on aspects of the food safety management system because there is no plan to implement the system at the present time and the plans set are limited to the implementation of production operations represented by production plans and marketing plans.

4. There is a weakness on the part of the top management in determining the resources needed to implement the food safety management system and it has not developed a special policy for the system and the weakness of financial allocations directed to the activities of the food safety system and that the available resources target production processes in the planned manner only.

5. Although there are documented and implemented procedures for training and awareness activity, there is a shortcoming in defining the programs of the food safety management system and placing them within the approved plans, as well as the lack of mechanisms to educate workers on this system.

6. Factories implement planned programs for internal auditing according to the international standard (ISO 9001: 2015) and these programs may sometimes include an audit of food safety activities, but they are somewhat weak and management review meetings are devoid of system inputs and do not rise to meet the critical success factor of performance evaluation, which Concerning the food safety management system.

7. The context of the organization for the food safety management system was not specified, although the factory specified its context according to the quality management system.

8. Although there is an integrated procedure to identify, evaluate and address risks and opportunities, there is a significant weakness in directing them towards the food safety management system and there are no plans to monitor the risks of food safety activities, and therefore factories depend on the curative strategy instead of the preventive strategy in this aspect.

9. There is a specification of the concerned parties that the organization deals with, but there is a weakness in defining their expectations and needs and monitoring their fulfillment, which is a prerequisite for most standard management standards.

10. Weakness in keeping pace with the development taking place worldwide in acquiring the latest devices and equipment as well as modern technology that helps reduce production mistakes as well as provide a high-quality work environment commensurate with the food industries.

11. The absence of a special entity or entity in the factories that is responsible for managing food safety in terms of regulating communications and monitoring the system.

5.2. Recommendations

1. Take advantage of the classification of critical success factors into internal and external, by using the strengths of the internal success factors and directing them in improving the processes that may result from critical success factors that are not under the direct control of the organization (it is possible to use the training success factor, for example, in solving problems that Surrounding the success factor represented by risks and opportunities, providing appropriate training for workers and increasing their efficiency and skill reduces the size of risks and raises the level of expected improvement opportunities).

2. Take advantage of the critical success factors resulting from the implementation of the quality management system (ISO 9001:2015), and make it an incentive to take a decision to adopt the implementation of the international standard (ISO 22000:2018) related to the food safety management system.

3. Initiating the development of a plan to implement the food safety management system, and the administration's pledge of full commitment to adopting this system as it is commensurate with the nature of the organization's work.

4. Assigning the top management the relevant units to determine the resources needed to implement the food safety management system and work on developing a special policy for the system in which the factories show their strategic direction, as well as assigning the financial units to set allocations to implement the system within their financial plans.

5. Requiring factory departments to include training programs related to the food safety

management system when determining annual training needs, and not approving the training plan by the top management, except in the case of ensuring that those programs are included and assigning responsibility to the training unit in factories to monitor the plan and aware workers.

6. Expanding the scope of internal audit activities and benefiting from the application of this activity in factories, where these activities are included in checklists for auditing the food safety management system and thus the results of those audits can be included as inputs to be discussed in the periodic meetings of management review and thus shed light on the evaluation of the food safety management system.

7. Benefiting from the specific context of the quality management system and expanding it to include internal and external issues and concerned parties related to the food safety management system, which contributes to defining the organization's context for this system.

8. Take advantage of the documented procedure for dealing with risks and opportunities and setting priority to identify the risks of the food safety management system as it is the infrastructure in the work of the organization and intensify monitoring of those risks and plans to address them according to a specific methodology that contributes to adopting preventive measures and reducing cases of non-conformity that increase remedial measures that cause losses great organization.

9. Benefiting from the identification of the concerned parties of the organization and adding the identification of the needs and desires of those parties from the application of the food safety management system, and this will help the organization to manage its relations in a manner that achieves the satisfaction of those parties.

10. Top management must take real steps in acquiring modern technology, which is one of the most important factors that help increase production efficiency, reduce mistakes and defects, and thus increase profitability and reduce costs of losses. Therefore, we recommend forming a technical committee to study all that is new at the technological level and identify a need the organization.

11. Suggesting the formation of a food safety team or unit according to the vision of the factories management, which is

entrusted with following up the progress of work in developing critical success factors that have led us to implement the main objective of the food safety management system.

References

1. Agus, P., Ratna Setyowati, P., Arman, H., Masduki, A., Innocentius, B., Priyono Budi, S., & Otta Breman, S. (2020). "The effect of implementation integrated management system ISO 9001, ISO 14001, ISO 22000 and ISO 45001 on Indonesian food industries performance". *Test Engineering and Management*, 82(20), 14054-14069
2. Al- Rebeawi, Saadoon Hmood Jther (2007), "The Possibility of Appling Hazard Analysis and Critical Control Points System on Customer Value", PhD thesis, College of Administration and Economics, University of Baghdad.
3. Al-Atabi, Taghi Muhammad Nasser (2014) "The Impact of Critical Success Elements in Achieving Sustainable Competitive Advantage", *Journal of Economic and Administrative Sciences*, College of Administration and Economics, University of Baghdad, V. 10, Issue 8.
4. Al-Dardsawi, Nour Faraj (2010), "The Impact of Critical Success Factors on Business Process Reengineering (Reengineering)" master's Thesis, Department of Public Administration, Mutah University, Jordan.
5. Alharthi, Salem Jraib (2014)," Critical Success Factors in the Implementation Of Performance Management Systems in UAE Government Organizations", Thesis for the degree of Doctor of Philosophy, faculty of business and law, university of southampton.
6. Al-Khafaji, Mohammad Hassan Mohammad Hussein (2018), "Measuring the Critical Success Factors for Total Quality Management" master's Thesis, College of Administration and Economics, University of Baghdad.
7. Al-Khatib, Samir Kamel (2008), "Total Quality Management a Contemporary Approach", Library of Egypt and Dar Al-Murtada, Baghdad, Iraq, 1st edition.
8. Al-Musawi, Ali Saad Alwan (2020), "Assessing the requirements of implementing the international standard ISO 45001:2018 Administering the Occupational Health and Safety System", master's thesis, College of Administration and Economics, Al-Mustansiriya University.
9. Baliyah, Lahbib (2019), "Total Quality Management - Concept - Fundamentals - Conditions of Application", *The Modern Academy of University Books*, Cairo, Egypt.
10. Bullen, Christine V. & Rockart, John F. (1981), "A Primer On Critical Success Factors", CISR No. 69 Sloan WP No. 1220-81.
11. Caralli, R. A. (2004)." The Critical Success Factor Method: Establishing a Foundation for Enterprise Security Management".Carnegie-Mellon Univ Pittsburgh Pa Software Engineering Institute. July 1-86.
12. Doumeizel, Vincent & Clegg, Richard (2019)." Foresight review of food safety".Lloyd's Register Foundation, Report Series: No.2019.2, UK.
13. Goddard, E., Muringai, V., & Boaitay, A. (2018)." Food Integrity and Food Technology Concerns in Canada: Evidence from Two Public Surveys". *Journal of Food Quality*, (2018). <https://doi.org/10.1155/2018/2163526>.
14. Gooch, Martin (2005). Drivers ," Benefits and Critical Success Factors of Developing Closely-Aligned Agri-Food Value Chains". *Research Associate-Value Chains*, 30. <https://www.iso.org/about-us.html>.
15. ISO. (2018). "ISO 22000:2018",En ISO 22000:2018, Ver.2.
16. Kok, M. S. (2009)." Application of Food Safety Management Systems (ISO 22000 / HACCP) in the Turkish Poultry Industry :A Comparison Based on Enterprise Size". *Journal of Food Protection*, 72(10), 2221-2225.
17. Lee, J. C., Daraba, A., Voidarou, C., Rozos, G., Enshasy, H. A. El, & Varzakas, T. (2021). "Implementation of Food Safety Management Systems along with Other Management Tools (HAZOP, FMEA, Ishikawa, Pareto)" *Foods* 2021,10, 2169. <https://doi.org/10.3390/foods10092169>

18. Mahmoud, Khalil Ibrahim (2018), "Quality management system according to the international standard ISO 9001:2015", the word, Baghdad, 1st edition.
19. Monge-Mora, P. M., Oliveira, D. L. G., Shevchenko, K., Cabecinhas, M., & Domingues, P. (2020). "Critical success factors during the implementation of ISO 22000:2018". International Conference on Quality Engineering and Management, 2020-Septe, 350–362.
20. Muhammad, Sayed Abdel-Nabi (2019), "The Modern System of Food Safety HACCP", Agency Publishers, Egypt.
21. Official site Of International Organization for Standardization, "About us", <https://www.iso.org/about-us.html>.
22. Rai ,V. Ravishankar & Bai ,Jamuna A. (2018)," Food Safety and Protection", Taylor & Francis Group, LLC,USA.
23. Sabry, Dalia Khaled (2010), "Critical factors in strategic planning and their impact on the performance of the organization", Master's thesis, College of Business, Middle East University, Jordan.
24. Shaheen, Ali Muhammad (2019)., "Quality and Environment Management", Al-Sham Private University, Lattakia, Syria.
25. Swink, M., Melnyk, S., Cooper, M., & Hartley, J. (2020)." Managing operations across the supply chain". In Journal of Supply Chain Management, Vol. 50, Issue 1.
26. Thompson, A.J.R & Strickland, A.J., (2002), "Strategic Management, Concepts and Cases", 13th Ed, by the McGraw-Hill Companies, USA.
27. Zimon, D., Madzik, P., & Domingues, P. (2020). "Development of key processes along the supply chain by implementing the ISO 22000 standard". Sustainability (Switzerland), 12(15), 1–22. <https://doi.org/10.3390/su12156176>.