



P-ISSN: 2394-1685
E-ISSN: 2394-1693
Impact Factor (RJIIF): 5.38
IJPESH 2022; 9(6): 88-105
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www.kheljournal.com
Received: 19-07-2022
Accepted: 23-08-2022

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Six sigma application requirements to improve the administrative performance of the public authority for sports in the State of Kuwait

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DOI: <https://doi.org/10.22271/kheljournal.2022.v9.i6b.2679>

Abstract

This study aimed to explore the extent to which the requirements for the implementation of the Six Sigma method are met at the Public Authority for Sports in Kuwait by focusing on the senior management's understanding for its philosophy and requirements, satisfaction of beneficiaries, the nature of training methods provided for the staff and the effectiveness of communication systems. These points were also explored from the perspectives of beneficiaries. The sample of the study consisted of (30) officials from the Public Authority for Sport who were chosen using a random sampling and 400 beneficiaries who were chosen using a purposive sampling. To achieve the aim of the study, two questionnaires were administrated and analyzed statistically. Results revealed a gap between the senior management in the public authority for sport (officials) and its beneficiaries and a clear weakness in the communication methods which created a dilemma for implementing Six Sigma method. Findings also suggested the lack of transparency in sport governance which does not align with the requirement of Six Sigma. Furthermore, the application of Six Sigma method needs development of and adoption for a new administrative method that takes into considerations beneficiaries' needs and desires. Therefore, the study proposed a model based on DMAIC methodology for implementing the Six-Sigma method as a way of improving the Public Authority for sport's administrative performance.

Keywords: Six Sigma, administrative performance, the public authority of sport, DMAIC model, officials and beneficiaries

Introduction

Large and small government, civil and private institutions seek to improve their levels of services to perfectionism; a requirement that both care providers and beneficiaries alike looking for. These institutions use many strategies to improve their performance by developing the methods of the administrative process and improve the quality of products and services (Ghoneim, 2004) [29]. There have been several administrative methods and techniques used in this regard. Foremost among these methods and techniques is the comprehensive quality management, which has had a great impact on the development of the administrative process in many different institutions. Six Sigma is also an innovative and distinct method and strategy to raise the level of quality, improve production processes and develop the quality of service in various institutions (Al-Shaman, 2005; He & Goh, 2015, Odeh, 2011) [14, 31, 39]. It is a strict quantitative method to improve quality and a flexible system that helps to improve the leadership style and performance levels of institutions. From a scientific and theoretical background, Six Sigma has been considered differently based on a statistical and administrative perspectives. From the statistical point of view, Sigma is the eighteenth letter of the Greek alphabet. The symbol (σ) was used by Gauss (1777-1855) to indicate the standard deviation of values from the arithmetic mean in the natural curve. Sigma value reflects the quality of the process performance. The higher the Sigma value, the less the defects or errors in its process outputs. This method is also one of the modern administrative methods that can be used in the industrial and service fields (Linderman, Schroeder, Zaheer & Choo, 2003) [38]. Since sports institutions are one of the major institutions, they are like other institutions of society in terms of management and structuring.

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(Al-Ghasab, 2003, Al-Ghassab & Al-Husseini *et al.*, 2012) ^[9].
^{7]}. Al-Ghassab & Al-Dosri; 2008 ^[5]; 2010; Al-Ghassab *et al.*, 2018 ^[54].

The researcher believes that the administrative process in sports institutions has become more complex than other institutions due to its multiple social, economic, and political objectives, which emphasize the need to adopt the application of Six Sigma as an approach for continuous improvement and a scientific methodology for managing change based on the analysis and measurement of deviation in the process. It is a philosophy based on the desire to reduce defects and focus on building and improving quality in the final product based on the desires and expectations of beneficiaries to reach acceptable levels (Kwak & Anbari, 2006) ^[36]. The term has been defined as a set of practices and structural processes in an integrated manner to improve operations and achieve flawless level of performance (Antony, 2005; 2006) ^[18]. Truscott (2006) ^[47] defines it as a scientific method for introducing new product, developing the provided service and the strategic process. Al-Asiri (2010) ^[1] considers it as an organizational thought as it focuses on the customers. From the administrative point of view, Six Sigma is a highly structured integrated management system to improve the activities of different processes. It represents an administrative organization that provides leaders with the methods and analytical tools necessary to solve problems and bring the process to the highest level of quality (Brady & Allen, 2006) ^[22].

Having presented the different views on Six Sigma, the researcher believes that it is a philosophy based on digital data and statistical analysis that identifies with high accuracy deviations in the organization, which helps managers and leaders to make the decision that ensures the preservation or upgrading of the quality of services provided by the organization.

In Kuwait, The Public Authority for Youth and Sports, is one of the governmental institutions concerned with the need to improve its services according to beneficiaries' desires. It is a government organization established on August 10, 1992, to look after youth affairs; creating the means for their strength and care, the development of their moral, mental, and artistic abilities, and the provision of the means to ensure the upbringing up of the religiously, socially, physically, and culturally good citizen and the strengthening loyalty to the nation. However, the practical reality, considering the renewal of cultures and the spread of science and technology, has proved that the integration of youth and sports into a single organization places more burdens, it has therefore become urgent to separate the sports sector from the youth sector under the umbrella of the Ministry of Youth Affairs. And in 2015, the Kuwait Public Authority for Sports was established as a separated government organization supervised by a competent Minister. It aims at:

1. Expanding the opportunities and base of the collective practice of sports, unleashing the energies, capabilities and creativity of young people in sports and caring for them, in accordance with the highest international standards in sports fields.
2. Encouraging sports by providing technical and financial support to promote sports and discover and develop the sports skills of young people.
3. Creating a healthy sports environment that prevents discrimination and intolerance of all kinds, and to develop a spirit of fair competition for the benefit of society.

4. Sponsoring the sports movement in the country and working to support and develop it.
5. Anti-doping prohibited in sports.
6. Developing physical fitness and disseminating healthy habits and sports values and principles.
7. Highlighting the cultural aspect of the country and introducing it locally and internationally in the sports field.

On this basis, the Public Authority for Sports was established to harness all sporting resources and systems to develop sports activities. The Public Authority for Sports must therefore seek a supporting tool to help in improving the quality of services and performance to meet global changes and achieve competitive standards. Six Sigma is considered the way to achieve it more effectively especially at a time in which sports institutions are accelerating to improve the quality of their outputs and operations, especially considering the global competition in the era of information, technology, economic, political, and social revolution (Kuwait Law No. 17 of 2015). Hence, the researcher tries to find modern methods with high capacity to face and address the problems to achieve the best results and amongst these methods is Six Sigma method.

The study problem

In the light of the academic work and experience of the principal researcher in the field of sports and based on the findings of previously reviewed studies in the same field, it has been found that the services provided by sports institutions generally and particularly in the public authority for sports are inadequate and inappropriate to the needs of beneficiaries and employees (Al-Ghassab & Al-Dosari, 2010) ^[6]. Furthermore, many of the sport institutions are lacking the standards in accordance with the requirements of the present era in terms of quality and mastery of performance and content, which must work to satisfy beneficiaries and employees. The researcher also noted, through the interviews he conducted with officials in the Authority and beneficiaries of the services, the following:

- Pressures, challenges, and problems impeding the practice of work in the desired manner (lack of a clear scientific method for evaluating performance and lack of training in data collection and analysis).
- Failure of workers at all administrative levels to participate effectively in the planning processes.
- Weak administrative and technical level of personnel.
- Inadequate internal procedures in some departments of the Authority and difficulty of the documentary cycle.
- No use for modern technological methods.

From the perspective of researchers, Six Sigma method is an important tool to improve and enhance the work of the Public Authority for Sports in Kuwait. Therefore, the researchers believe that it is necessary to study the requirements of applying the Six Sigma method at the Public Authority for Sports in Kuwait to find out the necessary solutions to achieve the goals for which the Authority was established to achieve professionalism in the administrative performance.

Study Objectives

- A. Determine the extent to which the requirements for the implementation of the Six Sigma method are met at the Kuwaiti Public Authority for Sports from the perspectives of officials and beneficiaries by:

1. Evaluating the status through exploring:
 - The extent to which the senior management of the Public Authority for Sports understands the philosophy and the requirements of applying the Six Sigma method.
 - Focusing on the satisfaction of beneficiaries working at the Public Authority for Sports.
 - Training methods and continuous improvement of the staff of the Public Authority for Sports.
 - Effective communication systems and information in the Public Authority for Sports.
- B. Developing a proposed model for the application of the Six Sigma method in the Public Authority for Sports.

Study Questions

What are the basic requirements and the extent to which they are available to apply the Six Sigma method in the Public Authority for Sports?

- To what extent is the senior management of the Public Authority for Sports aware of the philosophy and the requirements for applying the Six Sigma method?
- Is there a focus on the satisfaction of beneficiaries of the Public Authority for Sports?
- Are there training methods and continuous improvement used for employees of the Public Authority for Sports?
- Are effective communication systems and information at the Public Authority for Sports available to achieve the desired goal in accordance with the Six Sigma method?
- What are the elements of the proposed model for the application of the Six Sigma method in the Public Authority for Sports?

Literature review

Previous studies in the literature have studied the application of six sigma in the sport field. Some of these studies have aimed at developing a proposed model in some youth and sport directorates in Southern Upper Egypt (e.g., Abdel-Haq & Abdel Mohsen, 2017) ^[3] and identifying six sigma approaches and dimensions and apply them to improve the performance of faculty members and quality output at Al Jouf University (Hassan, 2017) ^[30]. Others (e.g., Dudin, 2014) aim to determine the extent to which Sigma Six is used in public and private Jordanian universities, and to clarify the importance of its application in continuous improvement of educational processes and services, as well as the obstacles to its application in the mentioned universities. While the study of Abdulaziz (2011) ^[45] aims at revealing the requirements for applying Six Sigma methodology to improve the performance of the administrative apparatus in the College of Education in Hafr Al-Batin University of Dammam. In Iraq specifically, in college of administration and economic, University of Mosul, Ismail (2011) ^[34] conducted a study to demonstrate the importance of Six Sigma as a distinct approach to improving the quality of higher education. In Kuwait, there is also the study of Al-Ghasab and Al-Mutawa (2010) ^[11] which aims to identify the determinants of restructuring as an approach for developing the performance of sports clubs by identifying the club strategy, organizational structure, human resources systems and policies, and the performance of employees. By using Six Sigma, Salem's study (2011) ^[45] aimed at exploring the Possibility of applying Six Sigma mechanisms to assess and develop the quality of educational leadership in educational supervision in Al-Ahsa governorate in Saudi Arabia. The study aimed at clarifying the extent of benefits from the application of the Sigma six program in assessing and developing the quality of educational leadership in

educational supervision. Furthermore, in the Security Forces Officers Club in Riyadh, Al-Zahrani (2010) ^[15] studies the extent to which the Six Sigma method can be applied in the Security Forces Officers Club in Riyadh. Similarly, Albliwi *et al.* (2017) ^[2] aim to identify the status of the application of Six Sigma method in organizations in the Kingdom of Saudi Arabia. In a different context, Yahya (2007) ^[51] conducted a study in Egyptian hotels to explore requirements of service quality in health clubs with the aim of identifying the requirements for quality of services. Likewise, Hussien & Al-Sayyad (2007) ^[52] explores the quality of recreational services and their relationship to profitability in Conrad hotels, with the aim of identifying the quality level of recreational services provided.

In health clubs, Ibrahim (2011) ^[35] conducted a study to explore the requirements for total quality management in Cairo and Giza; with the aim of identifying the availability of the requirements for total quality management in health clubs by identifying the commitment of the health club management towards achieving the philosophy and objectives of quality, as well as effective management of the human element. Conducted a study to explore the requirements for total quality management application as an approach for the development of the Sports for ALL in the Ministry of Youth, with the aim of identifying the availability of the total quality management application requirements. In Bahrain, has investigated a study to identify the nature of the administrative work of the sports federations and identify the possibility of developing the administrative performance of the Olympic sports federations through the approach of total quality management. Both LeMahieu *et al.*, (2017) ^[37] and Cudney *et al.*, (2017) ^[37] conducted a systematic literature review of the application of Six Sigma method in higher education to present the best practices.

It is clear from the presentation of the objectives of previous studies that there is no study that aimed at identifying the requirements for the application of Six Sigma to develop administrative performance to design a proposed model considering the results of research which is the aim of the current study. Furthermore, the samples of previous studies varied between workers in sports institutions (clubs, federations, youth and sports authority and directorates), hotels, faculty members in universities, the Ministry of Higher Education, and some profit sectors. The current research was conducted on a different sample; the employees of the Public Authority for Sports in the State of Kuwait in which there are scarce of research. Most studies have relied on the questionnaire as a data collection method. Whereas the current research has relied on the use of two questionnaires as tools for data collection one for officials and the other one focuses on beneficiaries.

In addition to the above-mentioned notes, the findings and recommendations in previous studies have been diverse. For example, the study of Hassan (2017) ^[30] recommends the need to apply the Six Sigma method for administrative and academic processes and in all the different faculties of the university in general through the preparation of the Six Sigma project and the training courses for different work teams and attracting human competencies in dealing with this method due to its impact on improving current practices. Despite of the importance of Six sigma method, the study of Abdul Haq and Abdul Mohsen (2017) ^[3] demonstrates that the senior management does not have a clear strategy for administrative change and development. Therefore, they recommend the development of a proposed model for the application of the

Six Sigma method on some youth and sports directorates in Egypt. Likewise, Dudin's study (2014) ^[55] concluded that this method is a modern one in universities, and that there is no clear model for this method that can be applied for the purpose of improving educational processes and services. The study of Ismail (2011) ^[34] concluded that the application of Six Sigma requires a new organizational structure that reflects the new roles of individuals, responsibilities and powers, and the levels therein determine the number and type of individuals required to be in this organization, and that the application of Six Sigma in the college requires the presence of skilled individuals with designations defining their duties and skill level, to be called champions or belt holders. Emphasizing on this, the study of Al-Ghasab and Al-Mutawa (2010) ^[11] recommends the need to develop a clear strategy and organizational structure suitable for global developments, and to develop a system and policies for human resources, and the need to determine the performance of workers by obtaining training courses to raise their efficiency. Among the most important results of the study of Salem (2011) ^[45] is (1) the availability of statistical programs and modern versions of Six Sigma programs and facilitating training for their use, (2) readiness of the Educational Supervision Department to overcome all obstacles and requirements for the use of Six Sigma program, scheduling of rewards, estimation of the educational supervision administration employees when using the Six Sigma program, and granting them opportunities to participate in decision-making. The study of Al-Zahrani (2010) ^[15] indicated the administration's commitment and strong beliefs to the total quality as a system, the activation of the quality method in managing the work of health clubs, through the management's awareness of the needs of customers, which is reflected in the level of service provided to them. Also, Al-Zahrani (2010) ^[15] found that the administration uses the quality of service as a competitive weapon in the labor market with competing clubs, and that the effective management of the human element is clarified through the systems of appointment, selection, training, and then promotion of workers, which provides an appropriate level of satisfaction for workers. Yahya (2007) ^[51] concluded that there is sufficient experience for health club workers. Health club service providers also have the ability to develop services in accordance with customers' desires. She found that there is trust and reliability on the part of workers to meet the needs of clients, as well as a sense of security when dealing with health club workers. The workers are characterized by respect and ethics when dealing with clients. The needs of clients are considered to be the top priority and concerns of the administration and workers (e.g., system for receiving complaints from clients). Hussien & El-Sayyad (2007) ^[52] found that recreational services are diverse covering the needs of customers who use recreational services frequently at Conrad Cairo and Sharm El Sheikh hotels. The method of selection and appointment of employees in the recreational services at both hotels is with experience and qualifications. There is also a direct contact between the administration and employees with the aim of achieving a distinguished level of quality in the recreational services at both hotels. There is awareness among the management and employees that the high quality of recreational services increases profitability. Ibrahim (2011) ^[35] concluded that administration is committed to quality as a system and believes in the activation of quality method in the management of work in health clubs, through increasing awareness of the needs of customers, which is

reflected in the level of service provided to them. The administration also uses the quality of service as a competitive weapon in the labor market with competing clubs, and that the effective management of the human element is clarified through the systems of appointment, selection, training, and then promotion of workers, which provides an appropriate level of satisfaction for workers. The study of concluded that the administration is aware of the philosophy of quality through the existence of a future strategic planning for management. Also, findings showed the importance of focusing on the clients, through the existence of a written policy for development and improvement of services, considering employees to be the most important sources of ideas and improvement of services and considering workers the most important sources of ideas and improvement of services. Effective management of the human element is also available through the existence of an approved system for evaluating workers' performance and linking it to the promotion policy. In addition, there is a system for training employees through the administration's awareness of the importance of training specialists and managers, and the use of experts in the training process and qualifying new workers before assuming their jobs. The study of concluded that the objectives are clear and specific for all workers, and that there is an appropriate organizational structure with the requirements of working in sports federations. The study of LeMahieu *et al.* (2017) ^[37] concluded the most important principles underlying the six-sigma method are minimizing defect and costing, eliminating unnecessary activities and improving customer's satisfaction. The main steps involve designing, measurement, analysis, improvement, and control. Based on systematically reviewing the literature, Cudney, *et al.* (2017) ^[37] concluded that there are few studies in this area. Most studies suggest models for applying the method in higher education, but they did not include details of application process or results. The study of Albliwi *et al.* (2017) ^[2] concluded that this method is still in its initial stages in sport organizations in Saudi Arabia. Therefore, there was a need to conduct the current study in the Kuwaiti context.

Methodology

Approach

The researcher used the descriptive approach for its relevance to the nature and objectives of the study.

Research Sample

The researcher identified the target sample in the following ways:

First: The Sample of senior management

It includes the officials' managers, deputy managers, heads of departments in the Authority and some employers. They have been chosen using purposive/ deliberate sampling. The total number of the participants was (37) and (7) members have been excluded due to their participation in the piloting study. Thus, the final number of senior management members was (30) participants.

Second: The Sample of beneficiaries

It includes members of the boards of directors of clubs and federations, the Olympic Committee, administrators, coaches, and referees. They were chosen using a random sampling, and their number reached (430) individuals and 30 participants were excluded from the main study due to their participation in the piloting study. Therefore, the total number of

participants for the main study was 400 individuals.

Data Collection Tools

Questionnaire

It is one of the main data collection methods used in this study. Based on the research problem and objectives, the researcher designed two questionnaire forms one for officials and the other one for beneficiaries. The design of the questionnaire was based on (1) identifying the main construct/themes/axes based on previous literature and studies on Six Sigma and the comprehensive quality in the field of sport (Appendix 1). After this, (2) the researcher has identified the statements to be measured under each construct. For this stage, the researcher initially formulated the statements of the two questionnaire forms through the reference to the theoretical literature and previous studies' results. The researcher also formulated some statements based on his own experience in the field of sports, and in the light of the theoretical framework of the concept of six Sigma in general and its applications in the field of sports in particular. The researcher then presented the questionnaire to experts for amendment, deletion, or addition, to ensure that all the statements are suitable for the construct/axes developed.

The researcher developed the statements of the first questionnaire for senior and executive officials under each dimension of the main constructs. The number of the statements of the form amounted (55) statements, with (21) statements for the dimension of the extent of the awareness of the senior management of the Authority of its philosophy and the requirements of applying the method of Six Sigma, (8) statements for the dimension of focusing on beneficiaries working at the Authority, (13) statements for the dimension of training and continuous improvement of employees at the Authority, and (13) statements for the dimension of effective communications and information systems.

The researcher also developed the statements of the second questionnaire for beneficiaries under each dimension of the main construct. The number of the questionnaire statements involved (33) statements, with (13) statements in the dimension of the performance of the senior management and employees of the Authority towards beneficiaries and (8) statements in the focus dimension for beneficiaries and (5) statements in the dimension of training and continuous improvement of the Authority's employees and (7) statements in the dimension of effective communications and

information systems. Then, the researcher presented these phrases to a group of experts in the field of sports management and public administration in order to identify the validity of the phrases for each of the dimensions in the two questionnaires.

Validity and reliability of the instrument

A. The validity of the content

The questionnaire was presented to (5) experts in the field of sports management to find out their opinions on the appropriateness of the axes/construct and phrases belonging to each axis for the topic of research. The level of agreement and acceptance reached 80%.

B. Internal consistency

The validity of the internal consistency was calculated by calculating the significance of the correlation coefficient between the item and the total score of the constructs to which it belongs, using a correlation coefficient for each of the questionnaire for the senior and executive management (officials) in the authority and the questionnaire for the beneficiaries. For the first questionnaire (i.e., the senior and executive officials) and the second one that focuses on beneficiaries, the correlation coefficient between each item and the construct it belongs to was statistically significant at the level of significance of (0.05) except for some statements (Appendix 2).

Reliability

The researcher calculated the stability of the resolution using Cronbach's Alpha coefficient. The values of the coefficients for the reliability of the "alpha" for the first questionnaire range between (0.845, 0.952) and the second questionnaire range between (0.803, 0.922), which confirms that the resolution has an acceptable degree of reliability (appendix 3).

Findings and discussion

First: Questionnaire for Senior and Executive Management (Officials) in the Authority

Table 1 below showed officials' responses to answer the first research question which is related to the extent to which the senior management of the Public Authority for Sports understands its philosophy and the requirements of applying the Six Sigma method.

Table 1: Frequencies, percentages and (Chi-Square) for responses of the research sample on the first axis/constructs' statements; senior management awareness, philosophy, and requirements of applying the Six Sigma method (n = 30).

	Statements	Yes		To some extent		No		Estimated total score	%	Chi-Square
		Frequencies	%	Frequencies	%	Frequencies	%			
1	The Authority's administration realizes that the Six Sigma philosophy cannot be achieved by following the typical traditional methods of management by motivating all employees at all levels of management to improve and develop work	30	100.0	0	0.0	0	0.0	90	100.0	60
2	The administration develops plans to improve and develop performance of the authority to implement Six Sigma in light of the analysis of existing problems and available capabilities.	0	0.0	0	0.0	30	100.0	30	33.3	60
3	The Authority's administration emphasizes the importance of meeting the needs of beneficiaries and satisfying their desires for activities and services of the Authority.	30	100.0	0	0.0	0	0.0	90	100.0	60
4	The authority's administration has the ability to find solutions and alternatives to the problems facing the work of the authority's departments.	5	16.7	25	83.3	0	0.0	65	72.2	35
5	The authority's administration enhances the ability of the department's employees to take responsibility.	27	90.0	3	10.0	0	0.0	87	96.7	43.8
6	The Authority's administration is keen to prioritize work in light of the strategic objectives set for work in the Authority.	2	6.7	27	90.0	1	3.3	61	67.8	43.4

7	The Authority's administration takes decisions through the participation of experienced staff and in light of the availability of decision-making information.	3	10.0	25	83.3	2	6.7	61	67.8	33.8
8	The Authority's administration is concerned with the achievements and improvements achieved by each department separately.	4	13.3	24	80.0	2	6.7	62	68.9	29.6
9	The authority's administration is concerned with continuous evaluation of the various stages of work in the Authority.	28	93.3	1	3.3	1	3.3	87	96.7	48.6
10	The authority's administration is concerned with developing specialized programs in the field of applying Six Sigma method for employees.	1	3.3	1	3.3	28	93.3	33	36.7	48.6
11	The Authority's administration encourages coordinated teamwork using cooperating teams.	2	6.7	26	86.7	2	6.7	60	66.7	38.4
12	The Authority's administration follows a clear and fair common policy in the distribution of incentives and rewards to employees.	1	3.3	1	3.3	28	93.3	33	36.7	48.6
13	The Authority's administration is keen to involve employees in planning to promote the authority.	2	6.7	26	86.7	2	6.7	60	66.7	38.4
14	The Authority's administration is keen to discuss with employees the problems and difficulties they face at work and to suggest solutions from their point of view.	1	3.3	29	96.7	0	0.0	61	67.8	54.2
15	The Authority's administration is keen that those responsible for the activities are selected on the basis of competence and effective work experience to ensure the achievement of the Six Sigma method.	1	3.3	1	3.3	28	93.3	33	36.7	48.6
16	The Authority's administration creates an atmosphere of good human relations between those in charge of managing work in the authority and beneficiaries	25	83.3	2	6.7	3	10.0	82	91.1	33.8
17	The Authority's administration directs workers in various departments to submit periodic reports on their work to senior management.	30	100.0	0	0.0	0	0.0	90	100.0	60

*The value of (Chi-Square) is at the significance level (0.05) = 5.99

It is evident from Table (1) that the percentages of the responses of the research sample on the first questionnaire construct i.e., the perception of the senior management of the philosophy and requirements of applying the Six Sigma method, ranged between (33.3 % - to 100 %) and the values of (Chi-Square) are significant in the direction of the (yes) answers. As shown in the table, participants agreed positively on the statements (1, 3, 5, 9, 16, 17), agreed (to some extent) on the statements (4, 8, 6, 7, 13, 11, 14), and with no answers on the following statements (2, 10, 12, 15). The researcher attributes this to the fact that the administration was recently established in 2015 and it seeks, through their founding systems, to establish a general philosophy for development, and therefore all administrative levels adopt this and work hard to achieve it through the use of the best administrative practices. Based on the participants' responses, the researcher also believed that the authority does not develop plans to improve performance to apply the Six Sigma method, nor does it develop specialized programs in the field of Six Sigma application. Also, the administration did not implement any strategy for Six Sigma and attributed this for the lack of infrastructure, and this is confirmed by the participants' responses on the construct of "effective communications and information systems" and the lack of administrative expertise and specialized competencies in the Six Sigma method, and this is also evident from the participants' responses to the phrase (8 to 15), which is considered an unexpected finding. In addition, this was confirmed by the participants' responses to statement number (4) that the administration is unable to find solutions to problems. Therefore, the researcher believes that the administration of the authority should adopt the system that achieves the philosophy of the authority and modern administrative systems, and the Six Sigma method

could be applied when administration avoids traditional methods as indicated by participants' responses to statement (1).

These findings are consistent with the study of which assured the belief of the senior management in the philosophy of quality comprehensive, customer-centric management and employees' participation in improvement processes. This result also agreed with the results of Ibrahim's study (2011) ^[35], which showed the confirmation of the higher administration willingness to support the application of Six Sigma, as well as the study of Al-Rawi (2011) ^[12], which found that the higher administration is ready to use contemporary methods in the field of quality and excellence. Furthermore, these findings are in line with the study of Al-Asiri (2010) ^[1], which indicated the seriousness and enthusiasm of the senior management in getting rid of old methods and searching for new and advanced methods. This also agreed with the studies of Al-Asiri (2010) ^[1], Obaidullah (2005) ^[40], Antony & Bhaiji (2003) ^[20], and Othman (2007) ^[53], that the enthusiasm and support of the senior management and its willingness to support the various programs of the Six Sigma method are among the most important elements and requirements that help to apply the Six Sigma method. Briefly, the researcher believed that the Six Sigma philosophy is something that will be implemented in the near future, but it requires efforts and unconventional methods and requires concerted efforts of all employees and a great deal of time to prepare the Authority with all its human and material capabilities to adopt and achieve the Six Sigma method. Table 2 below presented officials' responses to answer the second research question which is related to be there a focus on the satisfaction of beneficiaries of the Public Authority for Sports?

Table 2: Frequencies, percentages and (Chi-Square) for responses of the research sample on the second axis/construct's statements; focus on employees of the Authority (n = 30)

S. No	Statements	Yes		To some extent		No		Estimated total score	%	Chi-Square
		Frequencies	%	Frequencies	%	Frequencies	%			
1	The Authority's administration works to achieve compatibility between administrative work and activities provided, while satisfying the needs and desires of employees	30	100.0	0	0.0	0	0.0	90	100.0	60
2	The Authority's administration is keen to create a positive and tangible interaction between officials of departments and activities and between employees thereof.	29	96.7	1	3.3	0	0.0	89	98.9	54.2
3	The Authority's administration is keen to survey employees' opinions and the extent of their satisfaction with the services provided by the Authority's management on a regular basis during the year.	29	96.7	0	0.0	1	3.3	88	97.8	54.2
4	The Authority's administration continuously introduces new services within its plans.	3	10.0	26	86.7	1	3.3	62	68.9	38.6
5	The Authority's administration is concerned with the existence of a mechanism in one of its departments to receive and follow up on complaints.	0	0.0	0	0.0	30	100.0	30	33.3	60
6	The Authority's administration is keen to hold meetings between management and employees to discuss them and respond to their inquiries regarding working mechanisms and global developments.	1	3.3	1	3.3	28	93.3	33	36.7	48.6
7	The Authority's administration designs services according to specifications that match employees' expectations.									

The value of (Chi-Square) is at the significance level (0.05) = 5.99

It is clear from Table 2 that the percentages of the participants' responses of on the second axis/construct, focusing on the employees of the authority, ranged between (33.3 % to 100 %). The values of (Chi-Square) are indicative in the direction of answering (yes) for the statements (1, 2, 3), (to some extent) for statement (4) and (no) for statements (5, 6, 7). The researcher believes that focusing on the employees of the authority is one of the Six Sigma essential requirement that the modern management philosophy should focus on. The administration system based on Six Sigma emphasizes the necessity and importance of paying attention to the human element and emphasizing the role of paying attention to the psychological, social, technical and financial aspects of these workers and highlighting the importance of their participation in development decisions. This contrasts the old view that emphasized the focus of the management on the customer and the sources of production neglecting the role of cadres and workers. As shown in the result, the authority of Sport is aware of the importance of satisfying the beneficiaries. These results are consistent with the study of Ghoneim (2004) [29] that the organization should be concerned with the satisfaction of its customers and deepen the idea that the client

or the beneficiary is the one who runs the organization. A successful organization seeks to identify and define clients' interests and expectations and identify the changes that occurred in their tastes while developing social relations with them by working to establish an information system that helps working toward satisfying clients' desires and needs. In addition, this finding confirmed the results of Ibrahim's study (2011) [35] which highlighted the emphasis of senior management that outstanding in serving the beneficiaries is one of its most important goals. This is also in line with the results Al-Zahrani's (2010) [15] and Al-Shaman's studies (2005) [14], suggesting the importance of focusing on meeting the needs and requirements of customers as a requirement for the application of Six Sigma. This contrasted the findings of Othman (2007) [53] study as their results indicated that there is no concern for meeting the needs of all students as soon as possible, and not wanting to help students permanently. Table 3 below presented officials' responses to answer the third research question which is related to: Are there training methods and continuous improvement used for employees of the Public Authority for Sports?

Table 3: Frequencies, percentages and (Chi-Square) for responses of the research sample on the third axis/constructs' statements; focus on training and continuous improvement for employees of the Authority (n = 30)

S. No	Statements	Yes		To some extent		No		Estimated total score	%	Chi-Square
		Frequencies	%	Frequencies	%	Frequencies	%			
1	The Authority's administration is keen to prepare qualification courses to develop the skills of employees according to their specializations and in line with Six Sigma in order to provide the best service to beneficiaries and satisfy them.	2	6.7	5	16.7	23	76.7	39	43.3	25.8
2	The Authority's administration studies the training needs of the Authority's employees and develops the necessary training programs to ensure the achievement of Six Sigma to improve their performance in line with global developments	5	16.7	1	3.3	24	80.0	41	45.6	30.2
3	The Authority's administration is keen to prepare and qualify new employees in the Authority's departments (preparatory training) before taking up their jobs.	29	96.7	1	3.3	0	0.0	89	98.9	54.2
4	The Authority's administration is concerned with the use of experts in the field of public administration and specialization with scientific and practical experience in preparatory training process	3	10.0	25	83.3	2	6.7	61	67.8	33.8
5	The Authority's administration is concerned with preparing, qualifying, and training department heads in the departments of the Authority, and	3	10.0	2	6.7	25	83.3	38	42.2	33.8

	encouraging ideas that call for continuous improvement in the Authority in light of Six Sigma standards.									
6	The Authority's administration sends employees for theoretical and practical training on the sciences and arts of modern management and Six Sigma in various disciplines, each according to its specialization, to ensure proficiency in service delivery.	2	6.7	1	3.3	27	90.0	35	38.9	43.4
7	The Authority's administration is keen to provide opportunities for employees to join training courses on the use of modern methods in management sciences, quality and Six Sigma.	4	13.3	24	80.0	2	6.7	62	68.9	29.6
8	The Authority's administration is concerned with planning to determine how to ensure improvement and development of work.	30	100.0	0	0.0	0	0.0	90	100.0	60
9	The Authority's administration uses advanced methods to measure the performance of employees and beneficiaries.	0	0.0	1	3.3	29	96.7	31	34.4	54.2
10	The administration is keen to take into account the opinions of employees and beneficiaries in the evaluation processes.	1	3.3	2	6.7	27	90.0	34	37.8	43.4
11	The Authority's administration is keen to benefit from measuring and evaluating the performance of employees in taking actions and decisions related to improvement and development.	5	16.7	25	83.3	0	0.0	65	72.2	35

The value of (Chi-Square) at the significance level (0.05) = 5.9

It is evident from Table 3 that the percentages of the participants' responses for the third axis/construct, focusing on training and continuous improvement for the employees of the authority, ranged between (34.4 % to 100 %). The values of (Chi-Square) are indicative in the direction of answering (yes) for the statements (3, 8), to some extent for the statements (4, 7, 11), and no for the statements (1, 2, 5, 6, 9, 10). The researcher attributes this result to the fact that the authority's management is interested in planning to determine how to ensure the achievement of improvement and development at work and is keen to prepare and qualify new employees in the authority's departments (introductory training) before hiring them. This contradicts participants' responses in the previous two axes/constructs (tables 1&2). Participants' responses in the first axis indicated (e.g., statement 10) that the authority's management is not interested in developing specialized programs in the field of applying Six Sigma method for employees. The researcher believes that these training programs are often a grant or contract with international companies and are offered for all employees of different specializations regardless of their specialization such as IT training and social public relationships programs etc. Therefore, the researcher believes that the importance of using and training employees on special programs in a Six Sigma method contributes to establishing a strong base for success, stable and continuous in the authority through a clear philosophy for the senior management, clarifying the goals for each employee, increasing the rate of improvement speed, encouraging

education, and training, and focusing on defects to avoid them and developing the product or the service provided.

This result is in agreement with the results of the study of Al-Shaman (2005) ^[14] and Ibrahim (2011) ^[35] and Al-Asiri (2010) ^[1], which confirm that the application of Six Sigma in the educational field requires the presence of cadres for training with a high degree of proficiency and indicated that training is an important factor in successful progress and development. It is also agreed with the study of Othman (2007) ^[53] which indicated the lack of interest in the process of training and qualifying leaders in the sports activity management in the directorate, and the absence of an in-service training plan to raise the level of specialists, and the lack of assistance from experts in the field of public administration and sports management to train and refine sports specialists, it also agreed with the study of Al-Faihan *et al.*, (2005) ^[13], whose results indicated that there is a shortage of training programs concerned with quality management, whether the programs are for managers, technicians or workers. It is worth mentioning that the study's result differed from the study of Al-Zahrani (2010) ^[15] whose results indicated the readiness of the administration to train the club's employees on the method of Six Sigma.

Table 4 below presented officials' responses to answer the fourth research question which is related to: Are effective communication systems and information at the Public Authority for Sports available to achieve the desired goal in accordance with the Six Sigma method.

Table 4: Frequencies, percentages and (Chi-Square) for responses of the research sample on the fourth axis statements; Effective communications and information systems for employees (n=30)

S.	Statements	Yes		To some extent		No		Estimated total score	%	Chi-Square
		Frequencies	%	Frequencies	%	Frequencies	%			
1	The Authority's administration is constantly developing and updating information systems and technology.	4	13.3	26	86.7	0	0.0	64	71.1	39.2
2	The Authority's administration is keen to develop an information system that helps it easily anticipate and prepare for problems.	1	3.3	1	3.3	28	93.3	33	36.7	48.6
3	The Authority's administration seeks to use the Internet to obtain the necessary facts, information, and data regarding the development of work.	26	86.7	4	13.3	0	0.0	86	95.6	39.2
4	The Authority's administration ensures the availability of sufficient information, data, and statistics of the work provided.	4	13.3	26	86.7	0	0.0	64	71.1	39.2
5	The Authority's administration ensures the availability of information and data on the needs of beneficiaries of the works provided.	3	10.0	27	90.0	0	0.0	63	70.0	43.8
6	The Authority's administration is concerned with providing an integrated information system to obtain accurate data quickly and easily, when needed and in a non-standard way.	4	13.3	26	86.7	0	0.0	64	71.1	39.2
7	The Authority's administration is keen to provide an integrated information system on the data of beneficiaries of the works	29	96.7	1	3.3	0	0.0	89	98.9	54.2

	provided.									
8	The Authority's administration is keen to use the database to help it manage its work and make the right decisions.	5	16.7	24	80.0	1	3.3	64	71.1	30.2
9	The Authority's administration is concerned with using the best means of advertising for the work it performs and its services.	5	16.7	25	83.3	0	0.0	65	72.2	35
10	The Authority's administration is concerned with providing modern and diverse means of communication for employees.	3	10.0	27	90.0	0	0.0	63	70.0	43.8
11	The Authority's administration has the ability to use modern means of communication.	6	20.0	24	80.0	0	0.0	66	73.3	31.2

The value of (Chi-Square) at the significance level (0.05) = 5.99

Table 4 demonstrates that the percentages of participants' responses on the fourth axis/construct, effective communications, and information systems for employees, ranged from (36.7 % to 100 %). The values of (Chi-Square) are significant in the direction of (Yes) responses to the statements (3 and 7), (to some extent) responses to the statements (1, 6, 10, 4, 5, 8, 9, 11) and (no) responses to statement (2). The researcher found based on officials' responses that the Authority's administration is concerned with providing an integrated information system to obtain accurate data quickly and easily when needed, in a non-standardized way. The Authority's administration also seeks to use the Internet to obtain the necessary facts, information, and data in relation to the development of work, as it is an essential part of the infrastructure and the technology management work. More importantly, it must be used and provided in accordance with the Six Sigma method and modern administrative systems. The researcher believes that this is due to the lack of understanding among officials in the Authority of the importance of paying attention to modern technologies, technological methods and tools, and their important and vital role in the process of administrative development and increasing the effectiveness of management,

due to the speed of modern methods and tools in accomplishing tasks and the speed in transferring information and data among employees. It is normal to find a large percentage of individuals in the sample who believe that there should be a relationship between modern management and technological tools, and that their absence is an obstacle to administrative development, as most responses came to an acceptable degree.

This finding is consistent with the results of the study of Galoud (2010) ^[28], which indicate that the use of technology in communication is linked to the improvement of overall institutional activities and functions. It is also consistent with the study of, which indicated that the use of technology in communication contributes to the development of administrative work. Furthermore, it is in line with the study of Seresht *et al.*'s study (2008) ^[23], which indicated the existence of administrative obstacles in the application of electronic management.

Second: Questionnaire of Beneficiaries

Table 5 below showed beneficiaries responses with regards to the performance of senior management and employee of the authority towards beneficiaries.

Table 5: Frequencies, percentages and (Chi-Square) for responses of the research sample on the first axis statements; performance of the senior management and employees of the authority towards the beneficiaries (n = 400).

S.	Statements	Yes		To some extent		No		Estimated total score	%	Chi-Square
		Frequencies	%	Frequencies	%	Frequencies	%			
1	Beneficiary satisfaction is the key to the success of the Authority's management	20	5.0	379	94.8	1	0.3	819	68.3	680.5
2	Management is based on solving the problems facing beneficiaries in a timely manner.	21	5.3	19	4.8	360	90.0	461	38.4	578.2
3	Beneficiaries are aware of the level of performance required within the Authority and there is considerable interest in beneficiaries.	8	2.0	10	2.5	382	95.5	426	35.5	695.8
4	The Authority's management relies on highly qualified personnel to perform the various training and administrative tasks that are reflected in meeting the needs of the beneficiaries.	1	0.3	20	5.0	379	94.8	422	35.2	680.5
5	All announced services are available at the Authority.	7	1.8	383	95.8	10	2.5	797	66.4	701.5
6	Location of the Authority is suitable and close to beneficiaries and stakeholders.	8	2.0	382	95.5	10	2.5	798	66.5	695.8
7	The way the Authority's management handles complaints and inquiries is appropriate and prompt.	1	0.3	19	4.8	380	95.0	421	35.1	685.9
8	Employees of the Authority have the necessary skills to provide the required service in a distinguished and professional manner.	10	2.5	19	4.8	371	92.8	439	36.6	635.9
9	All wishes of beneficiaries are quickly responded to.	19	4.8	10	2.5	371	92.8	448	37.3	635.9
10	The services provided by the Authority are supervised by high-performance experts and technicians.	5	1.3	5	1.3	390	97.5	415	34.6	741.3
11	The Authority's management is committed to the announced dates to provide various activities to beneficiaries and to start and complete the service accurately.	7	1.8	373	93.3	20	5.0	787	65.6	647.0

The value of (Chi-Square) at the significance level (0.05) = 5.99

Table 5 demonstrates that the percentages of beneficiaries' responses on the first axis/construct, the performance of the senior management and employees of the authority towards the beneficiaries, ranged from (36.6 % to 68.3 %). The values of (Chi-Square) are significant in the direction of (to some extent) responses to the statements (1, 5, 6 and 11) and (no) responses to statements (2, 3, 4, 7, 8, 9, 10). It is obvious to the researcher that the responses of the sample of beneficiaries towards the performance of the senior management are mostly not accepting. This is contrary to the responses of the sample of the senior management, which is normal because the management is always characterized by positive answers towards its services. But the real criterion is the beneficiary. Therefore, the opinions of the sample of beneficiaries must be taken into account in order to achieve the desired goal, which is the administrative development. In the light of the results of the study, the researcher believes that the performance followed by the Public Authority for sports needs a lot of modifications, as it follows a traditional administrative pattern that needs to be reviewed and modern administrative methods, such as Six Sigma, shall be applied. It should follow systems, policies and practices that are compatible with modern management methods that rely on

following the scientific method in the decision-making process.

This finding coincided with the results of the study of Othman (2007) ^[53] (39) which indicated that the available database does not greatly help in taking correct decisions, and the lack of information and statistical data on the degree of students' satisfaction with the activities provided to them. This is also confirmed by the study of Radi (2002) ^[43] which revealed that the senior management believes in a comprehensive philosophy of quality. Management is centered on the client, in addition to the availability of employees' participation in the improvement processes. It also agrees with the study of El-Gendy (1999) ^[27] that the first dimension to start with is the quality of service, improving the level of performance and selecting leaders by objective criteria. It also agrees with the results of the study of Hassan (2017) ^[30], which indicated that the leader and his subordinates should be involved in proposing action, decision-making procedures and discussing their problems, leading to greater initiative, innovation and attainment of the specified goals.

Table 6 below presented beneficiaries' responses with regards to their satisfaction of the Public Authority for Sports services.

Table 6: Frequencies, percentages and (Chi-Square) for responses of the research sample on the second axis statements; focus on beneficiaries (n = 400)

S.	Statements	Yes		To some extent		No		Estimated total score	%	Chi-Square
		Frequencies	%	Frequencies	%	Frequencies	%			
1	You feel safe and proud in dealing with the Authority's administration.	9	2.3	391	97.8	0	0.0	809	67.4	747.4
2	The Authority's administration is characterized by speed in service delivery.	0	0.0	8	2.0	392	98.0	408	34.0	753.1
3	The Authority's administration is keen to provide the required administrative and logistical services according to the needs of beneficiaries.	20	5.0	360	90.0	20	5.0	800	66.7	578.1
4	The Authority's administration holds continuous meetings with beneficiaries to discuss them and respond to their inquiries regarding the services provided.	8	2.0	1	0.3	391	97.8	417	34.8	747.3
5	There is credibility in dealing with the Authority's administration.	8	2.0	362	90.5	30	7.5	778	64.8	590.2
6	The Authority's administration is concerned with following up on you after completing the services provided.	9	2.3	30	7.5	361	90.3	448	37.3	584.9
7	The Authority's administration is concerned with taking your opinions on the future planning of the Authority.	5	1.3	5	1.3	390	97.5	415	34.6	741.3

The value of (Chi-Square) at the significance level (0.05) = 5.99

Table 6 demonstrates that the percentages of participants' responses on the second axis/construct, focus on beneficiaries, ranged from (34% to 67.4%). The values of (Chi-Square) are significant in the direction of (to some extent) responses to the statements (1, 3, 5), (no) responses to statements (2, 4, 6, 7). The researcher believes that there is a degree of acceptance among the participants' responses to statements (1, 3 and 5). This gives a strong indication of beneficiaries' feeling of safety and pride in dealing with the administration. This becomes evident in the speed with which the services are provided to beneficiaries, the interest in knowing their needs and interests regularly, and the quick response to any problem they face. The study is consistent with the study of Radi. They concluded that the administration has an awareness of the philosophy of quality through the presence of future strategic planning for the management, and the administration focus is on the client, through the existence of a written policy for the development and improvement of services, and the consideration of employees as the most important sources of ideas and the improvement of services. The researcher believes from the participants' responses to the statements (2,

4, 6, and 7) that the Public Authority for Sports does not care about the follow up of beneficiaries. This may be attributed to the lack of awareness among the Authority's officials of the importance of this aspect, to the true evaluation of the service, instilling a culture of belonging to the authority, and strengthening the relationship of mutual interaction between the two parties and its role in upgrading the Authority and its services. It contributes to the development and improvement of the Authority's performance. The researcher also believes that the Authority's administration must strengthen creativity within the organization to encourage beneficiaries to participate, innovate and benefit from their skills and abilities in carrying out works that require high expertise. This will lead to the continuation of the Authority and ensure its growth, which will be reflected on the country. This was confirmed by the study of Ibrahim (2011) ^[35], whose results revealed that the senior management confirmed that excellence in the service of beneficiaries (patients) is one of its most important goals. This finding is also in line with the results of the study of Al-Zahrani (2010) ^[15], the results of which pointed to the importance of focusing on meeting the

needs and requirements of customers as a requirement for the application of Six Sigma. This finding is also consistent with the results of the study of Al-Shaman (2005) ^[14], which explained that a focus on clients is one of the main principles of Six Sigma method, which builds its philosophy on the needs, desires, and attitudes of clients in order to obtain their

satisfaction.

Table 7 below presented beneficiaries' responses to the third construct focusing on beneficiaries' perceptions of the training and continuous development provided by the Authority for sport.

Table 7: Frequencies, percentages and (Chi-Square) for responses of the research sample on the third axis statements; focus on training and continuous improvement towards beneficiaries (n = 400)

S.	Statements	Yes		To some extent		No		Estimated total score	%	Chi-Square
		Frequencies	%	Frequencies	%	Frequencies	%			
1	The Authority's administration is keen on the continuous development of administrative works and services provided.	0	0.0	1	0.3	399	99.8	401	33.4	794.2
2	Regular meetings are held between the Authority's administration and beneficiaries of the stakeholders concerned to identify their proposals for continuous improvement of its activities.	1	0.3	10	2.5	389	97.3	412	34.3	735.8
3	Advanced methods are used to measure performance.	1	0.3	9	2.3	390	97.5	411	34.3	741.6
4	The Authority's administration is concerned with preparing feasibility studies for community projects to determine the future needs of beneficiaries to achieve their satisfaction.	0	0.0	5	1.3	395	98.8	405	33.8	770.6
5	The Authority's administration is keen to take advantage of performance measurement and evaluation to take actions and decisions related to improvement and development.	1	0.3	3	0.8	396	99.0	405	33.8	776.4

The value of (Chi-Square) at the significance level (0.05) = 5.99

Table 7 demonstrates that the percentages of participants' responses on the third axis/construct, focus on training and continuous improvement towards beneficiaries, ranged from (33.4 % to 34.3 %). The values of (Chi-Square) are significant in the direction of (No) responses to all statements of the axis. It is clear to the researcher from the participants' responses that the Authority's administration does not care to focus on training and continuous improvement towards beneficiaries. This shows a lack of progress in achieving its philosophy, as stated in the axis of the extent of senior management's awareness. Therefore, the researcher believes that it is necessary to pay attention to training programs and continuous improvement, given their major role in developing the administrative performance of the Authority and achieving its goals. The finding is in agreement with the study of Othman (2007) ^[53], which pointed out the lack of interest in the training and qualification of leaders in the Sports

Department in the Directorate, the lack of an in-service training plan to raise the level of specialists, and the lack of the use of experts in the field of public administration and sports administration to train and refine sports specialists. The results are also consistent with the study of Al-Faihan *et al.* (2005) ^[13] (10), which indicated that there is a lack of quality management training programs, whether for managers, technicians or employees. Therefore, the study of Al-Shaman (2005) ^[14] confirms that the application of Six Sigma in the educational field requires the presence of highly qualified training cadres and indicated that training is an important factor in the progress and successful development of Six Sigma programs.

Table 8 below presented beneficiaries' responses on the effectiveness of communication and information system provided to them by the Authority for sport.

Table 8: Frequencies, percentages and (Chi-Square) for responses of the research sample on the fourth axis statements; effective communication and information systems for beneficiaries (n = 400).

S.	Statements	Yes		To some extent		No		Estimated total score	%	Chi-Square
		Frequencies	%	Frequencies	%	Frequencies	%			
1	The Authority's administration is keen to provide an information network to facilitate service for beneficiaries.	0	0.0	4	1.0	396	99.0	404	33.7	776.4
2	The Authority's administration uses the best and fastest means of advertising and publicizing its services to beneficiaries.	0	0.0	3	0.8	397	99.3	403	33.6	782.3
3	The Authority's administration provides communication channels at a high level of accuracy and speed to communicate with beneficiaries.	0	0.0	9	2.3	391	97.8	409	34.1	747.4
4	The Authority's administration is keen to provide service providers with information on continuous improvement and management development in service provision.	0	0.0	8	2.0	392	98.0	408	34.0	753.1
5	The Authority's administration is keen to have communication in both directions between it and beneficiaries.	0	0.0	331	82.8	69	17.3	731	60.9	457.5
6	The Authority has an integrated information system to obtain data of beneficiaries quickly and easily when needed, in a non-standard manner.	1	0.3	0	0.0	399	99.8	402	33.5	794.2
7	The Authority's administration provides a website involving its activities.	0	0.0	18	4.5	382	95.5	418	34.8	697.0

The value of (Chi-Square) at the significance level (0.05) = 5.99

Table 8 demonstrates that the percentages of participants' responses on the fourth axis, effective communication, and information systems for beneficiaries, ranged from (33.5% to 60.9%). The values of (Chi-Square) are significant in the direction of (To some extent) responses to statement (5) and the values of (Chi-Square) are significant in the direction of (No) responses to statements (1, 2, 3, 4, 6, and 7). It becomes clear to the researcher through the responses of the sample that the Authority's administration is not aware of the necessity of continuous change and keeping pace with technological development, as well as the important role of the senior management in developing performance and achieving wishes of beneficiaries by providing the latest technological means that contribute to moving away from bureaucracy. Therefore, the researcher believes that it is necessary to develop and adopt strategies that would develop electronic administrative communication technologies to develop administrative performance to better serve beneficiaries. Effective communication methods must be used, and communication skills must be developed.

Galoud (2010) ^[28] stressed the need to adopt the concept of electronic government and to activate training courses at all levels in order to achieve the optimal independence of these technologies. The researcher also believes that this is due to the lack of understanding among officials in the Authority of the importance of paying attention to modern technologies, technological methods and tools, their important and vital role in the process of administrative development, increasing the effectiveness of management, and the speed that modern methods and tools achieve in completing tasks, and the speed

with which information and data are transmitted between beneficiaries. It is normal to find a large percentage of individuals in the sample who believe that there should be a relationship between modern management and technological methods and tools, and that their absence is an obstacle to administrative development. The researcher attributed the reason for this to the centralization of administrative work within the authority, in addition to the lack of trust in electronic administrative transactions. There may also be a problem in preparing employees to move to electronic administration. This is related primarily to employees' movement towards change management, which requires many seminars and lectures, in addition to the appropriate training in electronic programs. This is confirmed by the sample in the research axes of beneficiaries. This conclusion is consistent with the results of the study of Galoud (2010) ^[28], which indicated that the use of technology in communication is linked to the improvement of overall institutional activities and functions. It also agrees with the study of, which indicated that the use of technology in communication contributes to the development of administrative work.

The proposed model for the application of six sigma method to improve the administrative performance of the Public Authority for sport in Kuwait

Considering the findings of the study, the researcher developed a model that contributes to achieving and improving the administrative performance in the Public Authority for Sports based on the following elements (figure 1) and the mechanism for implementing the proposed model (figure 2).

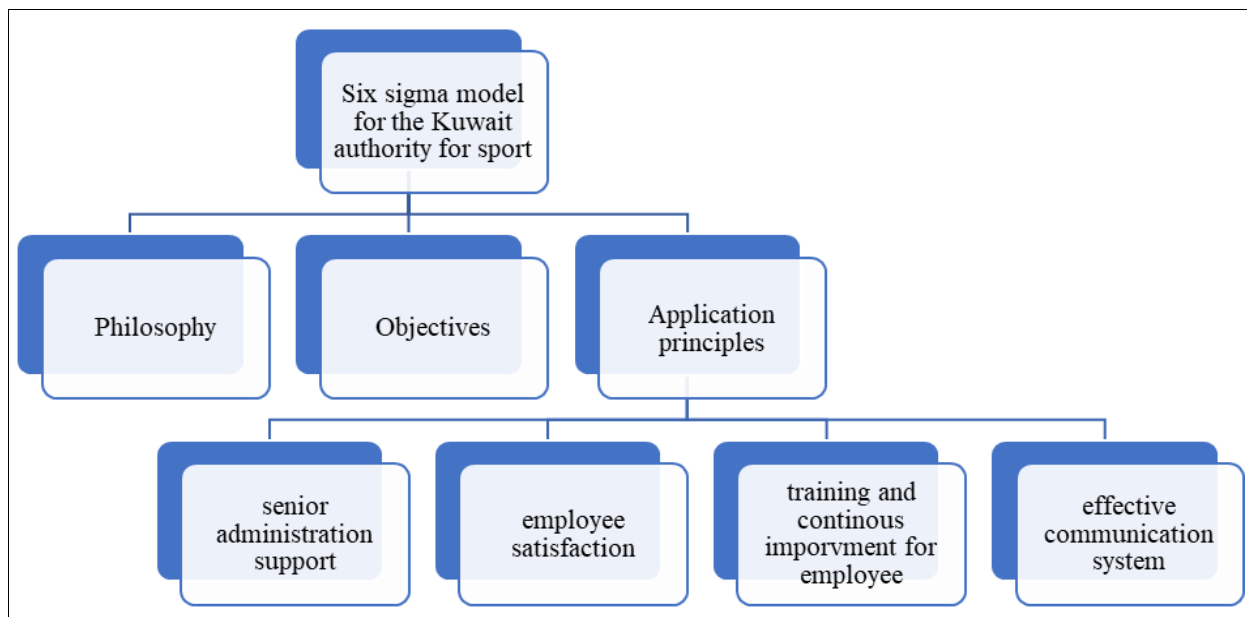


Fig 1: The proposed model for the application of six sigma method

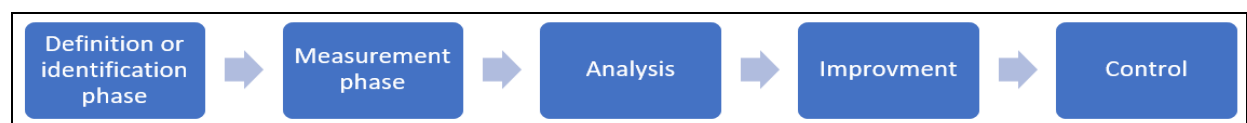


Fig 2: Mechanism for implementing the proposed model using DMAIC methodology

First: Philosophy of the Proposed Model

The philosophy of the proposed model for the application of the Six Sigma method to improve the administrative performance of the Public Authority for Sports in Kuwait is based on:

- Adoption of the senior management of the Public Authority for Sport in Kuwait to the philosophy and thought of the requirements for applying Six Sigma to improve administrative performance.
- Determination of the senior management of the Public

Authority for Sports in Kuwait to apply the requirements of Six Sigma method to improve administrative performance to empower employees and convey this to all employees at different levels and specializations.

- Training the employees of the Public Authority for Sports in Kuwait on Six sigma training programs, its importance and requirements. The training process shall be conducted by specialized entities to achieve the desired goal.
- All employees of the Public Authority for Sports in Kuwait should agree to change whatever their positions in the Authority. The responsibilities of everyone in their work shall be determined according to their specialization, to ensure that change is not resisted.
- Emphasizing that Six Sigma method shall gradually empower employees, a process that requires time and effort and requires the efforts of all employees at the Public Authority for Sports in the State of Kuwait to increase job satisfaction and thus raise the level of achievement reflecting positively on beneficiaries.
- Spreading the culture of change and development among employees of the Public Authority for Sports in the State of Kuwait and focusing on the need to pay attention to solving the problems facing the beneficiaries and employees.

Second: Objective of the Proposed Model:

The proposed model for the application of the Six Sigma method aims to improve the administrative performance at the Public Authority for Sports in Kuwait by:

- Clarifying the importance and benefits of applying the Six Sigma method.
- Achieving job satisfaction among employees with this method, which in turn will lead to the satisfaction of beneficiaries of the services provided by the Public Authority for sports in Kuwait for all categories, ages and sports bodies.
- Creating effective and direct channels and means of communication from the Public Authority for Sports in Kuwait to departments, whether from top to bottom, vice versa or horizontally.
- Enabling workers to access the information they need easily and conveniently to achieve the desired goal.
- Achieving continuous improvement and development of works in all departments of the Public Authority for Sports in Kuwait on an ongoing basis.
- Providing the necessary devices, tools, and capabilities to implement the Six Sigma method and training programs.

Third: Basic Principles for Applying the Model

Senior management support

- Spreading the culture of comprehensive quality in general and Six Sigma method within the Authority.
- Paying attention to the adoption of continuous improvement and the search for comprehensive quality programs in general and Six Sigma method.
- Paying attention to principles that focus on the satisfaction of beneficiaries and employees and encourage them.
- Facing resistance to change and addressing employees who resist the Six Sigma method.

Focus on beneficiary and employee satisfaction

- The Authority's management adopts a culture that emphasizes the importance of delivering high quality

services to beneficiaries.

- The Authority's management promotes the application of Six Sigma methodology to satisfy the benefiting employees.
- Providing the required administrative and logistic services according to the needs of the beneficiaries.
- Taking the views of employees and beneficiaries into consideration in the Authority's future planning.

Training and continuous improvement for beneficiaries and employees

- Training employees on the use of Six Sigma method by specialists.
- Conducting regular meetings between the Authority's management and beneficiaries of the parties concerned with providing activities to identify their proposals on the continuous improvement of its activities.
- Training employees on how to solve problems, properly manage emergency situations, and address shortcomings and negatives to ensure that they are not repeated considering Six Sigma indicators.
- Attention to planning to determine how to ensure improvement and development of work.

Effective communication and information systems at the Public Authority for Sports

- Providing an information network to facilitate service for beneficiaries.
- Work with the best and fastest means for publicizing and advertising their services to beneficiaries.
- Providing communication channels at a high level of accuracy and speed to communicate with beneficiaries.
- The authority's management is keen to provide the relevant service providers with information on continuous improvement and management development in service delivery.
- Providing an integrated information system for accessing user and service data quickly and easily when needed.

Mechanisms for Implementing the Proposed Model

The researcher adopted the DMAIC methodology to apply the model due to its relevance to the nature of work within the Public Authority for Sports. The DMAIC model is one of the models used in the implementation of the Six Sigma method. It involves five stages, namely the definition or identification phase (Define), the performance measurement phase that identify the current situation and the gap between it and the target (Measure), the analysis phase (Analyze), the improvement phase (Improve), and finally the control phase (Control).

First: Definition or Identification Phase

At this stage, the objectives of the activities are defined. These objectives represent the strategic objectives of the Public Authority for Sports. At this stage, an operations plan is drawn up, in which the inputs, outputs and the process controls are clarified, to identify the problem. The needs of beneficiaries are also determined by listening to their views, as well as by distributing questionnaires to them and uploading their responses. This phase aims to prepare for another study aimed at determining quality specifications for beneficiaries (such as confidence, speed of response, and completion time). Also at this stage, the team project document is drawn up that document the Six Sigma project

and provides all the relevant information. This document involves the problem situation, scope of work, setting goals, project plan, and selecting team members.

Second: Measurement Phase

At this stage, the current performance of the process is measured, and the data reliability is verified to ensure the validity of the established foundations. In this step, what beneficiaries want is translated into quantitative measurement, taking into account critical factors and the ability to measure accurately and clearly. At this stage, those responsible for the issue measure and study the current level of performance of all works, and then identify strengths and weaknesses in order to improve performance. There are several basic principles and questions related to measuring the effective performance of the Public Authority for Sports, including:

Questions

- How the process and its performance is level measured?
- What is the current performance of the process?
- Is there efficient measurement system?

Principles

- Knowledge of measurement methods and how to use them.
- Identifying what is required to be measured accurately.
- Determining the required standards.
- Measuring feedback from beneficiaries on performance.
- Feedback from measurements of employees.

Third: Analysis Phase

At this stage, the main cause of the deviation is identified. The focus at this stage is on analysis, benchmarking of the objectives of the process, and prioritization based on its contribution to the satisfaction of beneficiaries. At this stage, the initial data are analyzed to determine the methods that must be eliminated to bridge the gap between the current performance of the administrative apparatus of the Authority and the desired performance to develop a plan for improvement. Many tools and techniques can be used, the most important of which are:

- Brainstorming
- Cause and Effect Diagram
- PARETO Chart to measure the consequences of causes.
- Non-parametric statistics - drawing by SIPOC
- Process capability analysis - category analysis

Fourth: Improvement

It means designing and implementing the most effective solutions. At this stage, experiments are designed to determine the impact of the inputs expected to have the most impact on outputs of important quality specifications. At this stage, some statistical methods can be used to ensure improved performance. Perhaps the most important statistical methods that can be used in this regard are T-test, variance analysis, regression analysis, and correlation coefficients. This can be done within the framework of the following questions:

- Is it possible to suggest activities and ideas that reveal the problem?
- Is it possible to implement these proposed solutions?
- Can these solutions be tested to ensure that they are applied correctly?
- Which of these proposed solutions is more effective?

Fifth: Control

It means to verify that the improvements that have been made have led to improved performance, as well as to put in place mechanisms to ensure that the improvement will continue. The control also includes performance evaluation before, after, and during the improvement process. This phase aims to monitor the main performance measures of the administrative apparatus at the Public Authority for Sports to determine the extent to which further corrective actions are needed. A formula for technical and administrative control is selected and applied to the new process. At this phase, certain statistical methods are used to monitor the stability of the new systems. This stage involves answering several questions, including:

- How can the improvements made be sustained?
- What are the ways to document the new process?
- How can standard performance measures be built and selected?

Considering the presentation of the model, it is characterized by the following

- Problem measurement
- Selecting a team based on specialization.
- Focus on beneficiaries
- Data validation
- Overcoming unwanted habits
- Testing solutions or hypotheses
- Measurement and analysis of results.

Recommendations

Based on the results of the study, the researcher recommends the following:

First: The necessity of adopting a clear and practical philosophy through

- Focusing on workers and beneficiaries.
- Paying attention to the process of improvement and development.
- Attracting specialists for the training process.
- Developing a training program that achieve Six Sigma method.
- Developing an infrastructure of communication systems that contribute and ensure the achievement of Six Sigma.

Second: adopting the proposed model for Six Sigma requirements to improve the administrative performance of public Authority of sport. The Importance of applying the Six Sigma method to improve the administrative performance of the Public Authority for Sports in Kuwait by achieving the following benefits

- Improving beneficiary satisfaction
- Reduction in the rate of defects in the services provided to beneficiaries
- Reduction of variance in key service operations.
- Improving the orientation culture with continuous improvement.
- Improving time management to maintain and utilize the services provided.
- Increasing efficiency in addressing administrative problems.
- Improving and simplifying administrative procedures.
- Improving communications and increasing integration of communication elements.
- Changing trends and building teams.
- Facilitating the process of carrying out management

activities and programs developed.

- Providing highly optimized functional systems and effective interdepartmental communications.
- Providing a clearer administrative map.
- Increasing innovations and continuous improvement of service delivery.
- Achieving a real commitment by the employees towards the beneficiary's satisfaction, and the belief that the Authority is an institution geared to serving beneficiaries.

Conclusion

This study aimed to explore the extent to which the requirements for the implementation of the Six Sigma method are met at the Public Authority for Sports in Kuwait by focusing on senior management's understanding for its philosophy and requirements, satisfaction of beneficiaries, the nature of training methods provided for the staff and the effectiveness of communication systems. Based on this exploration, the study proposed six sigma model and the mechanism for applying it to improve the administrative performance of the public authority for sport in the state of Kuwait. The main findings suggested that the application of six sigma method needs development and adoption for a new administrative method that takes into considerations beneficiaries' needs and desires. Furthermore, it was noted that the public authority of sport neglects the importance of conducting meeting between the administration and employees and beneficiaries to understand their problems and needs. In addition to this, the importance of considering employees' training needs is also ignored; the finding suggested that six sigma requirements or training courses are not considered. Also, the communication system is weak and lacks effective strategy and plan to deal with any problems. Therefore, it is recommended to apply the proposed model of six sigma to improve the administrative performance of the public authority of sport in Kuwait.

Acknowledgement

A special thanks goes to research department of the Public Authority for applied education and training for funding this research. Thanks also goes to the Public Authority for Sport for providing the researcher opportunities to conduct this research in the organization. The researchers also would like participants who participate voluntarily in this research and the anonymised reviewers for providing feedback on the study instruments.

Funding

This research is funded by The Public Authority for Applied Education and Training (PAAET), Kuwait. Research project number (BE-20-60).

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Appendix 1: The researcher concluded the following:

***The First questionnaire form for senior and executive management (officials) of the Authority**

The main focus is to determine the availability of the requirements for the application of the Six Sigma method at the Public Authority for Sports in the State of Kuwait by identifying four sub-dimensions as follows:

- The extent to which the center's senior management is aware of its philosophy and the requirements of applying the Six Sigma method in the Public Authority for Sports in Kuwait.
- Focus on beneficiary satisfaction of employees of the Authority.
- Training and continuous improvement of the employees of the Authority.

- Effective communications and information systems for employees.

*** The Second questionnaire form for beneficiaries**

It includes a main axis, namely, to identify the extent of awareness of the requirements for applying the Six Sigma method in the Public Authority for Sports in the State of Kuwait. It includes (4) sub-dimensions, as follows:

- Performance of the senior management and employees of the Authority towards beneficiaries.
- Focusing on beneficiaries of (members of the boards of clubs, federations, the Olympic Committee, administrators, trainers, and their referees)
- Training and continuous improvement towards beneficiaries of (members of the boards of clubs, federations, the Olympic Committee, administrators, trainers, and their referees).
- Effective communications and information systems directed to workers and beneficiaries (members of the boards of clubs, federations, the Olympic Committee, administrators, trainers, and their referees).

Appendix 2

Table 1: Evaluate the correlation coefficient between the item and the total score for each axis of the questionnaire for the first questionnaire (n = 7).

	Effective communication and information systems for employees	Focus on training and continuous improvement of the authority's employees	Focusing on the authority's staff	Senior management's awareness of the philosophy and requirements of applying Six Sigma
	Value t	Value t	Value t	Value t
1	0.806	0.909	0.915	0.825
2	0.853	0.869	0.827	0.491
3	0.146	0.770	0.798	0.750
4	0.838	0.773	0.765	0.846
5	0.904	0.772	0.994	0.874
6	0.941	0.186	0.904	0.817
7	0.840	0.789	0.085	0.726
8	0.828	0.828	0.892	0.930
9	0.881	0.972		0.855
10	0.143	0.883		0.263
11	0.825	0.284		0.891
12	0.920	0.846		0.867
13	0.918	0.816		0.729
14				0.156
15				0.809
16				0.176
17				0.823
18				0.962
19				0.913
20				0.919
21				0.916

Tabular t value at the significance level of 0.05 = 0.714

It is clear from Table (1) that the correlation coefficient between each item and the axis it belongs to on the axes of the questionnaire for the senior and executive management (officials) in the authority was statistically significant at the level of significance of 0.05, except for the items numbers "2, 10, 14, and 16. And thus the number of items for the first theme becomes 17 statements. Statement no.7 was in the second axis was not significant so the total number of

statements for this axis was 7 statements. In addition to this, statements 6 and 11 were also not significant in the third axis therefore the total statements for this axis were 11 statements. Also, statements 3 and 10 were not significant for the fourth axis therefore they were excluded and the total number becomes 11 statements. Thus, the number of items in the questionnaire for the senior and executive management (officials) in the authority becomes (46) items.

Table 2: Evaluate the correlation coefficient between the item and the total score for each axis of the questionnaire for the beneficiaries (n = 30)

No	Effective communications and information systems for beneficiaries	Focus on training and continuous improvement towards beneficiaries	Focus on the beneficiaries	The performance of the senior management and employees of the authority towards the beneficiaries
	Value t	Value t	Value t	Value t
1	0.705	0.615	0.439	0.829
2	0.860	0.835	0.611	0.627
3	0.815	0.702	0.222	0.639
4	0.834	0.871	0.742	0.701
5	0.778	0.866	0.711	0.610
6	0.581		0.905	0.896

7	0.521		0.779	0.449
8			0.639	0.114
9				0.898
10				0.787
11				0.899
12				0.103
13				0.855

The value of (t) tabular at the level (0.05) = (0.361)

It is clear from Table (2) that the correlation coefficient between each item and the axis belonging to it on the axes of the questionnaire of the beneficiaries was statistically significant at the level of significance 0.05 except for the statements numbers "8, 12". Thus the number of the first axis's statements becomes 11 items; with statement No.3 for the second axis insignificant, so the number of items for the second axis becomes 7. Thus, the number of the questionnaire items for the beneficiaries becomes (30) items with an acceptable degree of validity.

Appendix 3

Table 1 represents the Alpha coefficient for the questionnaire themes/axis of the senior and executive management (officials) in the authority (n = 7).

Axis no.	Axis's name/themes	Value of the alpha coefficient
1	Senior management's awareness of the philosophy and requirements of applying Six Sigma	0.845
2	Focusing on the authority's staff	0.911
3	Focus on training and continuous improvement of the authority's employees	0.952
4	Effective communication and information systems for employees	0.918

The value of (t) tabular at the level (0.05) = (0.714).

It is clear from Table (3) that the values of the coefficients for the reliability of the "alpha" range between (0.845, 0.952), which confirms that the resolution has an acceptable degree of reliability.

Table 2: represents the Alpha coefficient for the axes of the questionnaire for the beneficiaries of the questionnaire (n = 30)

Axis No	Axis's name	Value of the alpha coefficient
1	The performance of the senior management and employees of the authority towards the beneficiaries	0.883
2	Focus on the beneficiaries	0.922
3	Focus on training and continuous improvement towards beneficiaries	0.803
4	Effective communications and information systems for beneficiaries	0.811

The value of (t) tabular at the level (0.05) = (0.361).

It is evident from table (4) that the values of the coefficients for the reliability of the "alpha" method range between (0.803, 0.922), which confirms that the resolution is at an acceptable degree of reliability.