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The Requirements for Applying the Six Sigma Method to Develop the Management Performance of the Employees at the Palestinian Ministry of Youth and Sports

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Abstract: This study aims to identify the requirements for applying the Six Sigma method to develop the management performance of the employees of the Palestinian Ministry of Youth and Sports based on enabling the concept and importance of developing management performance through the areas of Six Sigma: support of senior leadership, feedback and measurement, continuous improvement, processes and systems, and human resources using the descriptive approach. The research population consisted of 125 members of the officials working in the Palestinian Ministry of Youth and Sports, including managers, general managers, district managers, and heads of departments. The research sample consisted of 95 individuals from the Palestinian Ministry of Youth and Sports, and the researcher used the requirements for applying the Six Sigma method to develop the management performance of the workers at the Palestinian Ministry of Youth and Sports to collect data from its preparation and the appropriate statistical treatments. The author describes the obtained results that allow workers in the Ministry to move toward supporting senior leadership, feedback and measurement, continuous improvement, processes and systems, and human resources came at a medium level. Also, the author describes the obtained recommendations, working to improve the quality of the service provided by the Palestinian Ministry of Youth and Sports considering applying the Six Sigma method, assigning specialists to improve the quality of the service provided by the Ministry, developing a clear and defined strategy followed by services provided by the Ministry, holding periodic meetings and continuous training for the workers at sports federations and refining their skills to enhance service quality and improve their interaction with the visitors of the Ministry, and forming a human resource management unit at each federation, such that it can adopt all the requirements to apply the Six Sigma method.

Keywords: Six Sigma method, management performance, the Palestinian Ministry of Youth and Sports.

巴勒斯坦青年和體育部應用六西格瑪方法開發員工管理績效的要求

摘要：本研究旨在基於通過六西格瑪領域實現管理績效發展的概念和重要性，確定應用六西格瑪方法開發巴勒斯坦青年和體育部員工管理績效的要求：高級支持 領導力、反饋和測量、持續改進、流程和系統以及使用描述性方法的人力資源。研究人群包括 125 名在巴勒斯坦青年和體育部工作的官員，包括經理、總經理、地區經理和部門負責人。研究樣本由來自巴勒斯坦青年和體育部的 95 個人組成，研究人員使用應用六西格瑪方法的要求來開發巴勒斯坦青年和體育部工作人員的管理績效，以收集來自巴勒斯坦青年和體育部的數據 它的準備和適當的統計處理。作者描述了獲得的結果，這些結果使該部的工作人員朝著支持高級領導、

反饋和衡量、持續改進、流程和系統以及人力資源的方向邁進了中等水平。此外，作者描述了獲得的建議，努力提高巴勒斯坦青年和體育部提供的服務質量，考慮應用六西格瑪方法，指派專家提高該部提供的服務質量，制定明確的並確定了該部提供服務所遵循的戰略，為體育聯合會的工作人員定期舉行會議和持續培訓，提高他們的技能，以提高服務質量，改善他們與該部訪客的互動，並在每個聯合會，這樣它就可以採用應用六西格瑪方法的所有要求。

关键词：六西格瑪法，管理績效，巴勒斯坦青年和體育部。

1. Introduction

Modern management is among the main fields of human activities due to its importance in implementing work, achieving objectives through other people, and improving life in general. The concept of modern cities is based on cooperative principles to ensure the prosperity of societies.

Modern management has become an essential cornerstone for local or international business organizations considering a dynamic environment that is subject to high competition and adaptation to continuous change and development in all target sectors within the labor market to meet the needs of consumers in all areas of life. This requires flexible and disruptive organizational systems that align with organizational operations and roles [16, p. 16].

Business organizations strive for perfection to avoid mistakes as much as possible through the completion of administrative activities. Therefore, the reader may notice Six Sigma's ability to bring together different ideas into a coherent and interdependent management process [15, p. 27].

The Six Sigma method is one of the modern scientific methods in management science that contributes significantly to the provision of tangible and intangible products to business organizations impeccably [14, p. 31].

[13] defines it as an approach for development and improvement. It is a strategy that enables the organization to achieve continuous improvement in its fundamental operations and structure through developing and controlling the daily work activities to minimize waste and achieve optimum exploitation of available resources, while meeting the customer's needs and satisfaction.

[20] defined it as a smart method of work management, as it prioritizes customers and relies on facts and data to achieve better solutions.

[19] considers it a comprehensive and resilient system to achieve maximum work success based on the reasonable usage of facts, data, and statistical analysis and on concentration on the management, improvement, and update of work operations.

The researcher believes that it is a modern administrative model that aims to achieve the highest

possible quality at the lowest costs for business organizations through the continuous development of inputs, processes and outputs.

The importance and advantages of Six Sigma are as follows [18]:

- Increasing awareness of problem-solving methods;
- Increasing the efficiency of management decisions;
- Boosting productivity level and profitability;
- Enhancing workers' commitment;
- Reducing the production cycle time;
- Improving the service harmony level through organized production;
- Positively changing the organization's culture by focusing on doing the work correctly from the first time;
- Improving operations and removing excess activities in a way that contributes to minimizing costs and production flaws;
- Increasing customers' satisfaction and reinforcing their loyalty to the organization through continuously knowing the customer's needs and requirements along with the changes that occur on them.

Six Sigma application requirements are as follows [17, pp. 40–44]:

1. Human resources. Connecting the approach with the incentive system, connecting the senior management rewards with the success of implementing sigma six projects, and training workers at all levels to develop and improve their job performance.

2. Technical and financial factors. Technical factors include systems that support the data collection process, the availability of efficient means of communication, the exchange of data inside and outside the organization, the provision of effective training tools, the presence of automated instruction, and the availability of software packages that assist in choosing the project and determining its priorities. Financial factors, including the availability of financial support are necessary for training, implementation tools, and software.

3. Management aspects include the commitment and support by the senior management, the provision of

organizational infrastructure, the connection of Six Sigma with the consumer or service receiver, the connection of Six Sigma with suppliers, and the organizational change in the organization's culture through considering the organizational and personal technical factors.

4. The accelerating changes and developments in today's world in the various fields and sectors at the managerial, economic, and technological levels and the information and communication revolution have encouraged organizations to seek new methods to keep up with all that is happening.

Six Sigma principles for business success within business organizations are as follows [16, pp. 20–26].

- Six Sigma adopts the effective management that is based on anticipatory planning, as it turns “response management” into “solving problems before they occur”; and effects infinite cooperation among the various management levels to achieve the desired objectives.

- Six Sigma focuses on internal operations and activities as a central factor of success and competitive advantage.

- Six Sigma applies statistical tools such as histograms, Pareto charts, flow charts, and Shewhart cycle among others.

- Operations include every activity of any size conducted by the organization, including the issuance of an invoice, namely, focusing on beneficiaries. It is the top priority of the Palestinian Ministry of Youth and Sports to achieve the satisfaction and success of the Palestinian sport teams and making the decisions based on accurate facts and data (fact-based management).

The researcher sees that Six Sigma relies on scientific tools that focus on priorities and on fewer but more vital initiatives. Among the scientific tools applied in Six Sigma are the Deming cycle, Daniel's model, and collective involvement. Six Sigma stresses the involvement of everyone in the collective work, decentralized communication, horizontal communication, and the prevention rather than the inspection that exhausts human and financial capacities. It seeks to approach performance perfection through the continuous inclusion of new thoughts and methods.

[9] believes that Six Sigma apply to develop the management work at the Ministry of Youth and Sports. Sigma six is a convenient approach for service organizations. After the definition of the approach, the objectives of the Ministry of Youth and Sports are defined in line with the needs of the Palestinian sports teams. Afterwards, the works were described, named, analyzed, and determined. Measurement is the collection of information conveniently for a defined time for a defined purpose according to the work conditions. Analysis determines the best methods to apply the work and data, analyze the information and

determine the strengths and weaknesses and their causes.

Redesign is the geometrical representation of the management processes to meet the needs of the Palestinian sports clubs, make proposals and recommendations for improvements directly after analysis to achieve objectives. The execution refers to determining the methods and tools necessary for execution, setting the detailed stages, procedures, and relevant parties and bodies; and assigning specializations, tasks, and responsibilities as needed for the execution. Control means making the follow-up reports at the needed level, measuring the improvement indicator after improvement, and setting correctional procedures to ensure continuous development and improvement.

The researcher sees sports teams play a great role in achieving the country's overall goals, as they work to invest in and develop the human power; set the general policies of spreading and developing the various sports; run and supervise the financial, technical, and organizational aspects of the various sports; abide by the international rules and principles; organize professional application within the boundaries of international unions; partake in championships and contests as per their rules and principles; prepare teams to represent Palestine in the Olympic, international, and regional championships; coordinate efforts among the various bodies and federation members; settle any potential conflicts under the regulations of the Ministry; and support the representation in the international and continental federations.

[6] confirms that the Sigma Six approach is needed by all service organizations, especially the sport-related ones because they face many logistics problems. Therefore, they need the Six Sigma method to help them enhance their service level and achieve competitive advantage in the sports labor market. People in charge of sport organizations ought to ensure the successful application of the Six Sigma approach through taking the necessary measures to change the culture of workers, who need comprehensive change in their thoughts and attitudes. They need to be encouraged to implement the Six Sigma and develop its program by introducing some incentive and reward systems. This can be the driver of applying Six Sigma through providing the necessary communication among workers. Continuous discussions should be held before the implementation process to introduce them to the method application and advantages.

As the researcher is a permanent member at several clubs, he is well-aware of the services they provide. Among the flaws in the services provided to the members are bureaucracy and routine paperwork regarding joining the club, requesting service, or subscribing for a certain sport at the club. Other issues include the insufficient security and safety of the club,

the inefficiency in meeting the demands of members and visitors, and the lack of periodic maintenance of the sport fields and facilities, thus negatively affecting the quality of the services provided to the members. This requires a search for development mechanisms for these services.

1.1. Research Importance

1.1.1. Scientific Importance

This research seeks to identify the requirements of applying the Six Sigma method to develop the management performance of workers at the Palestinian Ministry of Youth and Sports. It stresses the need that boards of directors of the various Palestinian sports clubs should seek guidance to apply this management method as a statistical method that takes steps to develop and improve the management performance and largely minimize errors and flaws.

1.1.2. Practice Importance

Workers at the Palestinian sports clubs may benefit from the application of the Six Sigma method to develop management performance. There is an urging need for field studies on the Six Sigma method at the various Palestinian sports organizations including the Olympic Committee, the sports federations, the Ministry of Youth and Sports, and the Palestinian clubs to improve the efficiency and effectiveness of all relevant management processes.

1.1.3. Social Importance

This study may benefit in the future decision-makers in the field of sports, whether at the local or international level.

1.2. Research Objectives

This research aims to identify the requirements of applying the Six Sigma method to develop the management performance of workers at the Palestinian Ministry of Youth and Sports through the aspects of: support of the senior management, feedback and measurement, continuous improvement, processes and systems, and human resources.

1.3. Research Questions

The main question is: What are the requirements of applying the Six Sigma method to develop the management performance of workers at the Ministry of Youth and Sports?

The following secondary questions are derived from the main question:

1. What are the requirements for applying the Six Sigma method to support the senior management in developing the management performance of workers at the Palestinian Ministry of Youth and Sports?

2. What are the requirements for applying the feedback and measurement of the Six Sigma method to

develop the management performance of workers at the Palestinian Ministry of Youth and Sports?

3. What are the requirements for applying continuous development of the Six Sigma method to develop the management performance of workers at the Palestinian Ministry of Youth and Sports?

4. What are the requirements for applying the Six Sigma method for the processes and systems to develop the management performance of workers at the Palestinian Ministry of Youth and Sports?

5. What are the requirements for applying the Six Sigma method for human resources to develop the management performance of workers at the Palestinian Ministry of Youth and Sports?

1.4. Research Terms

The researcher defines it as a statistical method that follows certain steps to develop and improve the management performance by following the statistical steps of incremental analysis of data and aggregated statistics to identify errors and flaws in an attempt to reach a zero-error state.

It is procedurally defined according to the degree recorded by the tested individuals by using self-evaluation on the scale of the requirements of applying the Six Sigma method to develop the management performance of workers at the Palestinian Ministry of Youth and Sports in five fields: support of senior management, feedback and measurement, continuous development, processes and systems, and human resources; as prepared by the researcher.

Palestinian Ministry of Youth and Sports is a formal Palestinian National Authority institution that aims to raise a generation that is well aware of its humane and national role through developing its cultural, social, sport, and health awareness based on participation, equality in freedom of speech, indiscrimination, and participation by both genders [9], developing the management performance, an effort for including a set of changes in the capacities of the management body of the institution to enable the Ministry to take part in the comprehensive development process [12, p. 32].

2. Literature Review

2.1. Previous Studies

The Six Sigma topic has received special attention from researchers in the sports field, as follows.

[6] analyzed the reality of improving the quality of the services provided by the Egyptian sports federations considering the Six Sigma method through identifying the efficiency of the administrative data systems, the quality of the provided services, promotion and program marketing, financial capacities, human resource management, and innovation and performance development in the Egyptian sports federations. The study sample comprised 159 workers at the Egyptian sports

federations, and the used tool was a questionnaire developed by the researcher on the reality of improving the services provided by the Egyptian sports federations considering the Six Sigma method.

The study concluded that the level of the efficiency of the administrative information systems at the Egyptian sports federations was medium, the level of the quality of the provided services was medium, the level of promotion and program marketing was medium, the level of financial capacities was low, the level of human resource management was high, and the level of innovation and performance development at the Egyptian sports federations was medium.

[7] applied the Six Sigma system on community service and environment development centers at the Faculty of Physical Education for boys at Helwan University. The sample consisted of 77 administrative managers and trainers at the community service and environment development centers at the Faculty of Physical Education for boys at Helwan University. The university used a questionnaire developed by the researcher to investigate the success factors of applying the Six Sigma approach.

The study concluded the following:

a) the sample members are aware of the significance of internal development at the community service and environment development centers by applying the Six Sigma system through forming a six-sigma team at the community service center and training them to provide a high-quality service;

b) Absence of the culture of accepting change, such that the management convinces the workers that resist the application process;

c) The management's willingness to oblige the workers to use the Six Sigma method;

d) The weakness of the collection of information about the hesitated workers and weakness of the services provided by the center, thus affecting the implementation of the Six Sigma method;

e) Disagreement among the research sample on the ability of the center management to fulfill its commitments through continuous improvement and financial support.

[10] evaluated the opinions of workers at governorate Directorates on Youth and Sports (similar to civil service within the Ministry of Youth and Sports' General Directorate of Sport) in Turkey regarding the feasibility of implementing the Six Sigma management model considering certain variables. The study sample included 210 employees of the various Governorate Directorates of Youth and Sports in Turkey. The study used the questionnaire tool, and concluded that the employees had positive opinions on the application of a Six Sigma management model in the regional directorates of youth and sport. According to the study, it can form the base for implementing the Six Sigma model if the study results are addressed

because it ensures support and leadership by senior management in addition to the Six Sigma principles such as orientation of customers, tolerance with failure, management of the orientation process, and continuous development. Active participation of all and tolerance with failure are the two main steps of the Six Sigma program.

[11] implemented the Six Sigma management model in the Turkish language on the national soccer team. The sample comprised 24 matches of the Turkish national soccer team. The study used brainstorming and fish bone. The researchers found a statistically significant correlation among the match outcomes of the Turkish National Soccer Team and the game formation, the positive shoot rate, the positive defense rate in the first zone, and the positive defense rate in the second zone. Because of the improvement, the z bench value for the positive defense rate in the first zone was increased. The study concluded that the Six Sigma management model was applicable for coaching or training in soccer.

[8] investigated the strategy of applying the Six Sigma model in the Egyptian Federation of Wushu Kung Fu. The study used a descriptive approach. The sample included 157 members of the Egyptian Federation of Wushu Kung Fu Board of Directors, branch management boards, referee committees, coaches, and administrative in the Arab Republic of Egypt.

The study used a questionnaire and personal interviews as its tools. The results showed that the workers at the federation believed that good training that required the presence of competent trainers was absent. They believe it would be necessary to help them develop and improve their job performance. The researchers attribute this finding to the fact that most of the federation's training programs exclude all workers of the various specializations regardless of the work nature at the federations, such as training on using the computer. Additionally, courses are usually given as grants from international companies or organizations. Information systems are available, but are not sufficient to meet the requirement of applying the Six Sigma method in the Egyptian Federation of Wushu Kung Fu. The study recommended the approval of the financial allocations needed to improve performance quality.

[5] identified the requirements of applying the Six Sigma method at the sports clubs in Minya Governorate. The sample included 140 members of the Board of Directors. The study used a questionnaire prepared by the researcher on the requirements of applying the Six Sigma method at the sports clubs in the Minya Governorate. The results were that the management and organizational competence axis, the human resource management axis, the managerial information systems axis, and the performance evaluation axis at the club were all high.

[3] presented a proposed model for applying the Six Sigma method at the Egyptian Rowing Federation through: identifying the degree of availability of the requirements of applying the Six Sigma method at the Egyptian Rowing Federation. The sample included 59 workers in the Egyptian Federation. The tool was a questionnaire prepared by the researcher. The study found that the level of the senior management's support and contribution, the training axis, the axis of focus on beneficiaries, the information systems axis, the financial capabilities axis, and the cooperation axis were high. The researcher also presented a proposed model to apply the Six Sigma method at the Egyptian Rowing Federation.

2.2. General Commentary on Previous Studies

We see from the previous section that previous studies addressed the application of the Six Sigma method in Arab and foreign environments. However, they did not address the variables of the current research combined. These are the requirements for applying the Six Sigma model and developing the management performance. Our Palestinian environment, especially in Gaza, lacks such study, which encouraged the researcher to conduct this study.

Some of these studies addressed the requirements of applying the Six Sigma method; mainly the improvement in the quality of the provided services, the environment development, the improvement in performance quality, and the challenges facing the deployment of the Six Sigma in sport organizations.

The results of the previous studies show that the samples were various and different tools were used.

A correlation exists between the requirements of applying the Six Sigma method and the improvement of the provided services, the environment development, the improvement in performance quality, and the identification of the challenges facing the deployment of the Six Sigma in sports organizations.

Relationship between the current research and the previous studies is as follows. Upon the researcher's examination of previous literature on this research, he found that researchers have created higher quality standards to approach zero error or deficiency at the club. They found that the Six Sigma method is an extension of comprehensive quality, as confirmed by the studies of [3, 6, 8, 10, and 11]. All these studies concluded the importance of applying the Six Sigma method in all organizations, due to its undeniable role in enhancing the quality of their services.

This encouraged the researcher to conduct this study as an attempt to determine the requirements of applying the Six Sigma method to develop the management performance of workers at the Ministry of Youth and Sports. The researcher believes that the Six Sigma strategies stress that the more capable the organization (the sport clubs) to measure the flaws in a certain process (the club frequents), the easier it is for it to

minimize these flaws to zero or near perfection, relying on scientific methods.

This research agrees with previous studies in addressing the variables of "requirements of applying the Six Sigma method" and "management development." However, the researcher could not find a study that addressed these variables combined on a sample of workers at the Ministry of Youth and Sports. Examiners of domestic studies may notice the clear deficiency in addressing the variables of the current research and the scarcity, or absence, of similar studies at the local level. Therefore, this research has come to address this issue to identify the requirements of applying the Six Sigma requirements to develop the management performance of the workers at the Palestinian Ministry of Youth and Sports.

Another point of agreement between the current research and previous studies is identifying the level of applying the Six Sigma method. Additionally, the current, as well as previous studies, has chosen samples from among workers, board members, and trainers. However, the Palestinian literature lacks studies on female workers at the Ministry of Youth and Sports. The current research, as well as previous studies, has chosen a descriptive approach to answer the research questions.

This shows the importance of the Six Sigma in Sigma service-providing organizations. As the head of the Rafah Youth Club, the researcher finds that the Ministry of Youth and Sports shows some deficiency in the services provided to the sport, cultural, social, and entertainment clubs in terms of paperwork and the laws and regulations that govern the club boards' work. Therefore, the researcher decided to conduct the current study to identify the requirements of applying the Six Sigma method to develop the management performance of the workers at the Ministry of Youth and Sports.

The advantages of this research over previous ones is that it addresses the workers at the Palestinian Ministry of Youth and Sports, a topic that was never addressed independently in a similar study. This study is descriptive, as it identifies the requirements of applying the Six Sigma method to develop the management performance of the workers at the Palestinian Ministry of Youth and Sports, build psychometric tools to determine these requirements, and help future Palestinian researchers to conduct relevant studies on the same variables discussed here other groups of the Palestinian communities. To the researcher's knowledge, no studies exist that have examined all of the variables discussed here, making this study groundbreaking in the field.

3. Methods

3.1. Research Approach

The researcher used the descriptive approach, as it

is convenient for investigating the problem of the current study, which is identifying the requirements of applying the Six Sigma method to develop the management performance of workers at the Palestinian Ministry of Youth and Sports.

3.2. Research Population

The original population of the research comprises all officials at the Palestinian Ministry of Youth and Sports, including all 125 managers, general managers, district managers, and heads of department, as per the Ministry census for 2016–2017.

3.3. Sampling

The sample included (95) managers, general managers, heads of departments, and district managers. Thirty members were randomly chosen for a pilot study to develop the questionnaire. These members were excluded from the original sample.

3.4. Data Collection Tool

The researcher developed a questionnaire through the following steps. A survey was conducted on the theoretical studies, scientific research and relevant references, including the scales prepared [1, 4, 6, and 8]. The scale identifies the requirements of applying the Six Sigma method to develop the management performance of workers at the Palestinian Ministry of Youth and Sports. The questionnaire is composed of 28 paragraphs. To obtain equal weights for the questionnaire paragraphs, the evaluations 1, 2, 3 were given to a three-level scale (Yes, To Some Extent, No). The “support of senior management” field included 5 paragraphs, and so did the “feedback domain.” The “Continuous improvement” field included 8 paragraphs, while the “processes and systems” field and the “human resources” field each included 5 paragraphs.

The level of the Six Sigma method can be judged using the arithmetic means, such that the three-level scale includes Yes (three points), To Some Extent (two points), and No (one point). To measure the length of the five-level scale cells (minimum and maximum

limits), the range was calculated as the highest observation value – the lowest value ($3 - 1 = 2$), then the outcome was divided by the number of scale cells to obtain the corrected cell length ($2/3 = 0.66$). This value was added to the lowest value on the scale (one) to determine the maximum limit of the cell. As such, the cell length is calculated as follows: if the range value is between 1 and 1.66, the level is low; if the value is between 1.67 and 2.33, the level is medium; and if the value is between 2.34 and 3, the level is high.

The questionnaire axes were defined according to the objectives. The sentences expressing the questionnaire axes were phrased. The questionnaire was presented in its initial form to a group of (10) specialized experts from the academic divisions in the fields of management, business administration, and comprehensive quality management to examine:

- The convenience of the axes for the research topic;
- The relevance of phrases on each axis;
- Sufficiency, comprehensiveness, relativeness, and subjectivity of the phrases.

3.4.1. Questionnaire Validity

The questionnaire validity was calculated using two methods.

Content validity: The researcher relied on the honesty of the arbitrators to confirm the convenience and clarity of the axes and phrases. Some phrases were deleted, while others were modified, as per the experts’ opinions.

Internal consistency of the questionnaire paragraphs: The questionnaire validity was calculated by calculating the correlation coefficient between each paragraph and the total score of its field (validity of internal consistency). Additionally, the correlation coefficient between the total score of the scale with the total scores for each field (construct validity). These calculations were made on a pilot sample of 30 managers, general managers, district managers, and heads of departments. The following tables show the results.

Table 1 Correlation coefficient between each field paragraph and the total score of the paragraph (The researchers' development)

Support of senior management		Feedback and measurement		Processes and systems		Continuous Improvement		Human resources	
Paragraph	Correlation coefficient	Paragraph	Correlation coefficient	Paragraph	Correlation coefficient	Paragraph	Correlation coefficient	Paragraph	Correlation coefficient
1	0.67	1	0.75	1	0.84	1	0.67	1	0.46
2	0.77	2	0.84	2	0.69	2	0.81	2	0.81
3	0.66	3	0.80	3	0.80	3	0.78	3	0.87
4	0.74	4	0.79	4	0.67	4	0.84	4	0.82
5	0.68	5	0.66	5	0.77	5	0.77	5	0.69
						6	0.74		
						7	0.80		
						8	0.79		

Note: All correlation coefficients are statistically significant at 0.01.

Table 1 shows that all paragraphs of the fields (“support of senior management,” “feedback and

measurement,” “processes and systems,” “continuous improvement,” and “human resources” are statistically significant at significance level 0.01). The researcher

attributes this indicates that the field paragraphs are internally consistent with the total score of each domain.

Table 2 Correlation coefficients between each domain and the total score of the questionnaire (The researchers' development)

Field	Correlation coefficient	Significance level
Support of Senior Management	.988	0.000
Feedback and Measurement	.988	0.000
Continuous Improvement	.996	0.000
Processes and Systems	.711	0.000
Human Resources	.995	0.000

Note: All correlation coefficients are statistically significant at 0.01.

Table 2 shows that all fields of the requirements of applying the Six Sigma method exhibit correlation of statistical significance with the questionnaire total score; the researcher attributes this indicates a construct consistency for all fields.

3.4.2. Questionnaire Reliability

The researcher calculated the questionnaire reliability using the test – retest method where reliability coefficients of the questionnaire were calculated on the same validity sample by calculating the stability coefficient. This was done by applying the same questionnaire twice, one month apart. Table 3 shows the stability coefficients.

Table 3 Stability coefficients of the questionnaire fields for the requirements of applying the Six Sigma and of the questionnaire total score (The researchers' development)

No.	Fields of the requirements of applying the Six Sigma questionnaire	Number of paragraphs	Stability coefficient before modification	Stability coefficient after modification
1	Support of senior management	5	0.637	0.771
2	Feedback and measurement	5	0.503	0.669
3	Continuous improvement	8	0.834	0.913
4	Processes and systems	5	0.357	0.526
5	Human resources	5	0.490	0.657
	Questionnaire total score	28	0.783	0.879

Note: Range of the statistical significance for the r value at the significance level 0.01 for a degree of freedom (2–95) = 0.354.

The previous table shows that the stability coefficient values are statistically significant at 0.01 for the questionnaire fields and the questionnaire total score, The researcher attributes this indicates that the questionnaire fields and the questionnaire total score are highly stable.

3.5. Cronbach's Alpha

The researcher calculated reliability using the Cronbach Alpha coefficient using the scores of the same validity sample.

Table 4 Cronbach's alpha coefficients for the domains of the requirements of applying Six Sigma and for the questionnaire total score (The researchers' development)

Fields of the questionnaire on the requirements of applying Six Sigma	Reliability coefficient values
Support of the senior management	0.79
Feedback and measurement	0.75
Continuous improvement	0.75
Processes and systems	0.81
Human resources	0.79
Questionnaire total score	0.84

Note: All correlation coefficients are statistically significant at 0.01; Range of the statistical significance for the r value at the significance level 0.01 for a degree of freedom (2–95) = 0.354.

Table 4 shows that all stability coefficient values are statistically significant at 0.01 for the questionnaire fields and the questionnaire total value. The researcher attributes this indicates which confirming that the questionnaire fields and the total questionnaire score are highly stable.

Timeline: The original study was applied to the study sample from 05/10/2016 to 01/02/2017.

Statistical Processing: Frequency – Percentage – Correlation coefficient – Reliability using Cronbach's alpha – Chi square.

4. Results and Discussion

4.1. The First Question

“What are the requirements for applying the Six Sigma method to support the senior management in developing the management performance of workers at the Palestinian Ministry of Youth and Sports?”

To answer this question, the researcher calculated the arithmetic means, the standard deviations, and relative weights to identify the requirements of

applying the support of the senior management method to develop the management performance of workers at

the Palestinian Ministry of Youth and Sports, as shown in Table 5.

Table 5 Arithmetic means, standard deviations, and relative weights of the requirements of applying the support of the senior management method (The researchers' development)

Phrase	Arithmetic means	Standard deviation	Relative weight	Actual level
Willingness to apply the Six Sigma standards is present	2.18	0.360	72.6	5
Willingness to use modern methods to apply the Six Sigma method is present	2.20	0.380	73.3	3
The financial capacities for using the quality control programs are available	2.19	0.364	73	4
Financial capacities (offices and hardware...) needed for using the quality control programs are available	2.51	0.307	83.6	1
There are facilities in time and tools for using the quality control programs	2.39	0.404	79.6	2
The total score for the field of "support of senior management"	2.29	0.181	76.3	Medium

The previous table shows that the responses of the workers at the Palestinian Ministry of Youth and Sports toward the "support of senior management" field were medium.

The results of the current study agree with the results of [6], which indicated that the requirements for applying the support of the senior management were medium. However, the results disagree with those of [3, 5, 8, and 10], which all found the requirements to apply the support of senior management method as high.

The researcher attributes this outcome to the fact that applying the managerial Six Sigma method is a strategic decision whose long-term objective must determine how to achieve it. This needs persuasion and faith from the senior management that the financial and spiritual support is necessary for applying the Six Sigma method to develop the management work at the Palestinian Ministry of Youth and Sports. This shows the unawareness of the workers at the Palestinian Ministry of Youth and Sports of the importance of the Six Sigma method to developing management

performance in sports organizations. Therefore, the researcher believes that the senior management's support at the Palestinian Ministry of Youth and Sports of applying the Six Sigma method for developing the workers' management performance and its commitment to do what it takes in this regard will certainly lead to distinction in the performance level to achieve the Ministry's objectives with the highest efficiency and effectiveness.

4.2. The Second Question

"What are the requirements for applying the feedback and measurement of the Six Sigma method to develop the management performance of workers at the Palestinian Ministry of Youth and Sports?"

To answer this question, the researcher calculated the arithmetic means, the standard deviations, and the relative weights to identify the requirements of applying the feedback and measurement method to develop the management performance of workers at the Palestinian Ministry of Youth and Sports, as shown in Table 6.

Table 6 Results of the arithmetic means, the standard deviations, and the relative weights of the requirements of applying the feedback and measurement method (The researchers' development)

Phrase	Response			Arithmetic means	Standard deviation	Relative weight	Order
	Yes	To some extent	No				
The performance of all working directorates was measured	28	20	47	2.09	0.424	69.6	5
Senior management relies on financial and nonfinancial indicators to measure and correct performance as per adopted standards.	26	18	51	2.45	0.412	81.6	1
Statistical methods are applied	31	23	41	2.37	0.341	79	2
Unapproved measurement methods contribute to the improvement in the overall performance	19	18	58	2.33	0.419	77.6	4
Multiple methods are adopted to obtain information that helps in providing the various services.	37	19	39	2.34	0.443	78	3
Total score of the field "feedback and measurement"				2.31	0.212	77	Medium

Note: The Chi value at the degree of freedom (2) and significance level (0.01) = 0.354.

The previous table shows that the responses of the workers at the Palestinian Ministry of Youth and Sports regarding the field "feedback and measurement" were

medium.

The results of the current study agree with the results of [6], which found that the requirements of

applying the Six Sigma fields were medium. However, they disagree with the results of [3, 5, 7, 8, and 10], which all found the requirements of applying the fields of Six Sigma to be high. The researcher explains this as the development of managerial performance includes relying on financial and nonfinancial factors and multiple statistical methods. It also requires obtaining information that helps develop performance to enable the measurement of the performance of all workers at the Ministry of Youth and Sports. This indicates the unawareness of the study sample of the importance of applying the feedback and measurement method for developing the management work at the Ministry of Youth and Sports.

The researcher attributes this outcome to the fact that among the main requirements of applying the Six Sigma approach is the presence of the performance evaluation committee to supervise the governorates, in addition to the presence of specialized offices to measure performance, periodic follow-up by the club, continuous communication between the board of

directors and the workers at the club, the techniques needed for performance evaluation, the attempts to develop standards for measuring any deficiency that may occur when providing the service, an information system that enables easy performance evaluation, improved service provision by the clubs, and clear and defined standards for evaluating the performance of the sport services provided by the club.

4.3. The Third Question

“What are the requirements for applying continuous development of the Six Sigma method to develop the management performance of workers at the Palestinian Ministry of Youth and Sports?”

To answer the third question, the researcher calculated the arithmetic means, the standard deviations, and the relative weights to identify the requirements of applying the continuous improvement method to develop the performance of workers at the Palestinian Ministry of Youth and Sports, as shown in Table 7.

Table 7 Arithmetic means, standard deviations, and relative weights of the requirements of applying the continuous improvement method (The researchers' development)

Phrase	Response			Arithmetic means	Standard deviation	Relative weight	Order
	Yes	To some extent	No				
Continuous improvement of work is always considered a part of quality requirements.	21	23	51	2.37	0.35	79	4
A quality control program is used to apply the Six Sigma method.	12	15	67	2.45	0.32	81.6	3
Quality control programs are used to develop knowledge of the aspects of the managerial and technical processes.	24	18	53	2.27	0.40	75.6	5
The attention always exists to customers' and beneficiaries' suggestions to take guidance from them in improving the quality of the provided services.	22	20	53	2.13	0.41	71	8
Department heads are trained to form work teams for the continuous improvement process.	37	19	39	2.58	0.34	86	1
The quality improvement plans are monitored to ensure that the employees are fulfilling their plans.	28	20	47	2.46	0.48	82	2
Continuous improvement is in place to minimize the deviations and errors that occur in service provision.	32	18	45	2.26	0.39	75.3	6
Quality control programs are used to ensure the accurate detection of errors.	31	18	46	2.24	0.32	74.6	7
Total score of the field “continuous improvement”				2.09	0.19	69.6	Medium

Note: The Chi value at the degree of freedom (2) and significance level (0.01) = 0.354.

The previous table shows that the responses of the workers at the Palestinian Ministry of Youth and Sports regarding the field “continuous improvement” were medium.

The results of the current study agree with the results of [6], which found that the requirements of applying the continuous improvement method were medium. However, they disagree with the results of [3, 5, 8, and 10], which all found the requirements of applying the continuous development method to be high.

The researcher attributes this outcome to the fact that among the main requirements of applying the Six Sigma approach is the presence of the performance

evaluation committee to supervise the governorates, in addition to the presence of specialized offices to measure performance, periodic follow-up by the club, continuous communication between the board of directors and the workers at the club, the techniques needed for performance evaluation, the attempts to develop standards for measuring any deficiency that may occur when providing the service, an information system that enables easy performance evaluation, improved service provision by the clubs, and clear and defined standards for evaluating the performance of the sport services provided by the club.

The researcher attributes this finding to the fact that continuous improvement means adding new ideas all

the time to ensure continuity and distinction. It includes all the management processes at the Ministry of Youth and Sports and can be achieved through training the heads of departments to form teams, ensuring that the quality improvement plans are implemented by workers, using the quality control programs to develop knowledge of the aspects of the managerial and technical process and minimize errors and deviation, and relying on quality control programs to ensure accurate detection of errors; as continuous improvement is the backbone of organizations' survival, development, and distinction.

4.4. The Fourth Question

"What are the requirements for applying the Six Sigma method for the processes and systems to develop the management performance of workers at the Palestinian Ministry of Youth and Sports?"

To answer the fourth question, the researcher calculated the arithmetic means, the standard deviations, and the relative weights to identify the requirements of applying the processes and systems method to develop the performance of workers at the Palestinian Ministry of Youth and Sports (Table 8).

Table 8 Arithmetic means, standard deviations, and relative weights of the requirements of applying the processes and systems method (The researchers' development)

Phrase	Response			Arithmetic means	St. deviation	Relative weight	Order
	Yes	To some extent	No				
Readiness to provide an information exchange and flow system between the quality control programs.	24	15	46	2.321	0.204	77.3	1
Complete readiness to use programs to choose and compare the quality control programs.	18	16	61	2.289	0.206	76.3	3
Readiness and ability to provide a database for the quality control programs.	27	19	49	2.272	0.208	75.7	4
Readiness to provide a direct communication system with the quality program trainers.	22	20	53	2.248	0.142	74.9	5
Readiness to implement the training programs based on defined principles and standards.	31	19	45	2.304	0.174	76.8	2
Total score of the field "operations and systems"				2.286	0.186	76.2	Medium

Note: The Chi value at the degree of freedom (2) and significance level (0.01) = 0.354.

The previous table shows that the responses of the workers at the Palestinian Ministry of Youth and Sports regarding the field "operations and systems" were medium.

The results of the current study agree with the results of [6], which found that the requirements of applying the operations and systems method were medium. However, they disagree with the results of [3, 5, and 10], which all found the requirements of applying the processes and systems method to be high.

The researcher attributes this finding to the fact that adopting all facts to achieve information abundance as a clear insight for decision-makers about their surroundings to help them make informed decisions. Information exchange and flow systems between the quality control programs to implement training programs based on clear standards generally helps decision-makers and work teams to perform their jobs and solve their problems efficiently. They can help develop the management work at the Palestinian

Ministry of Youth and Sports, although the relative weight was found to be 76.2 toward No in the sample. This indicates their poor knowledge about the importance of applying the processes and systems method to develop the management work at the Palestinian Ministry of Youth and Sports.

4.5. The Fifth Question

"What are the requirements for applying the Six Sigma method for human resources to develop the management performance of workers at the Palestinian Ministry of Youth and Sports?"

To answer the fifth question, the researcher calculated the arithmetic means, the standard deviations, and the relative weights to identify the requirements of applying the human resources method to develop the performance of workers at the Palestinian Ministry of Youth and Sports, as shown in Table 9.

Table 9 Arithmetic means, standard deviations, and relative weights of the requirements of applying the human resources method (The researchers' development)

Phrase	Response			Arithmetic means	Standard deviation	Relative weight	Order
	Yes	To some extent	No				
Willingness to link promotions with the quality control programs.	19	17	59	2.345	0.234	78.1	1
Willingness to link the senior management reward with the success of implementing quality control programs.	13	16	66	2.280	0.143	76	4

Continuation of Table 9							
Willingness and ability to assign quality control program experts and consultants.	22	18	55	2.326	0.190	77.5	2
Willingness to provide material incentives to workers who undertake the implementation of quality control programs.	12	15	68	2.302	0.171	76.7	3
Willingness to provide moral incentives to workers who undertake the implementation of quality control programs.	12	17	66	2.246	0.216	74.8	5
Total score of the field "Human resources"				2.299	0.190	76.6	Medium

Note: The Chi value at the degree of freedom (2) and significance level (0.01) = 0.354.

The previous table shows that the responses of the workers at the Palestinian Ministry of Youth and Sports regarding the field "human resources" were medium.

The results of the current study agree with the results of [6], which found that the requirements of applying the human resources method were medium. However, they disagree with the results of this study. [2, 3, 5 and 10], which all found the requirements of applying the human resources method to be high.

The researcher also attributes this to the fact that human resources are an organization's fortune that must be maintained and invested in the best means possible. Such investment should be continuously improved through efficient preparation such as linking promotions to the quality control programs, having the will and ability to assign experts and consultants on the programs, offering material and moral incentives to the workers who undertake to implement the quality control programs.

The sample showing a relative weight 76.6 toward 'No' indicates their poor knowledge and negligence of human resources incentives, which prevents the development of management work at the Palestinian Ministry of Youth and Sports. The results also indicate that the sample are unaware that the strength of human resources and the effectiveness of the employees' performance through training, qualifying, and encouraging them mean the strength of the organization and its ability to compete against others and survive with efficient and effective performance.

The researcher explains this finding as it is among the main requirements of applying the Six Sigma method to assign experts in the service field, providing training programs on service quality, suggesting a structure for measuring the workers' performance at sports clubs, providing financial allocations to improve the service quality, adding a suggestion box for any service-related complaints, providing development programs to get high-quality programs, outsourcing experts in the quality field for evaluation, building a resilient organizational structure that enables monitoring the providing services, forming a special department to control the quality of the services provided by the clubs, having a manager that is resilient and caring for the opinions of the club frequents, and harmony of the manager's and the board of directors' decisions.

5. Conclusions and Recommendations

Considering the research results, the researcher made the following conclusions.

Regarding the first axis (support of senior management):

- There has not yet formed sufficient willingness to use the modern methods to apply the Six Sigma method;
- Financial capabilities are not available for using the quality control program;
- There are no time or tools facilitation for using quality control programs;

Regarding the second axis (feedback):

- The Ministry does not rely on statistical methods;
- The approved measurement methods do not contribute to the improvement in the overall performance;
- The performance of working directorates at the Ministry is not always measured;
- Senior management does not rely on financial and nonfinancial indicators to measure performance as per defined standards.

Regarding the third axis (continuous improvement):

- Training of the heads of departments on forming teams for the continuous development process is not stressed;
- The implementation of the quality improvement plans by workers is not checked;
- Continuous improvement for minimizing variation and errors that occur in service provision is not conducted;
- Quality control programs are not used to ensure accurate detection of errors;
- Continuous improvement is not always perceived as a part of quality requirements;
- Quality control programs are not used to apply the Six Sigma method;
- Suggestions of customers and beneficiaries are not eagerly considered for improving the quality of the provided services.

Regarding the fourth axis (Processes and Systems)

- There is no readiness to provide a database for the quality control programs;
- There is no readiness to provide a direct communication system with the quality program

trainers;

- There is no readiness to provide an information exchange and flow system between the quality control programs;

- There is no readiness to use programs to help choose the quality control programs.

Regarding the fifth axis (Human Resources)

- There is no readiness to assign experts and consultants on the quality control programs;

- There is no readiness to provide material incentives to the workers who undertake to implement the quality control programs;

- There is no readiness to link promotions to the quality control programs;

- There is no readiness to link senior management reward to the success of implementing the quality control programs;

- There is no readiness to provide moral incentives to the workers who undertake to implement the quality control programs.

Upon the previous presentation and discussion of the study results, the researcher recommends the following:

- Working to improve the quality of the service provided by the Palestinian Ministry of Youth and Sports considering applying the Six Sigma method;

- Assigning specialists to improve the quality of the service provided by the Ministry;

- Developing a clear and defined strategy that can be followed to reach a distinctive service provided by the Ministry;

- Holding periodic meetings and continuous training for the workers at sports federations and refining their skills to enhance service quality and improve their interaction with the visitors of the Ministry;

- Forming a human resource management unit at each federation, such that it can adopt all the requirements to apply the Six Sigma method.

As a summary, the Ministry of Youth and Sports in the State of Palestine always strives to be a leading institution by achieving the smartest way to manage business for its sports activities and relies on the use of information and facts to reach better solutions through designing and monitoring daily business activities so that waste and resource consumption are reduced using Six-Sigma to avoid the largest possible percentage of errors in all its sports activities and work to increase its flexibility in dealing with unstable environmental conditions in the West Bank and Gaza Strip to develop administrative performance with high efficiency and effectiveness.

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