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Investigation into the Quality Management Systems Implementation in Libyan Manufacturing Sector

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Abstract

Quality Management Systems (QMS) play a crucial role in enhancing organizational performance, product quality, and competitiveness within the manufacturing sector. In developing economies such as Libya, the effective implementation of QMS remains a significant challenge due to structural, managerial, and environmental constraints. This study investigates the extent of quality management systems implementation in Libyan manufacturing companies (LMCs) and identifies the key factors influencing their implementation. A mixed-methods research approach was adopted, combining structured questionnaires and semi-structured interviews with managers and quality professionals across selected manufacturing firms. The findings reveal that while there is growing awareness of QMS principles—particularly ISO 9001 standards—the level of practical implementation remains moderate to low. Major barriers include limited top management commitment, inadequate employee training, weak quality culture, and lack of awareness about QMS.

The study contributes empirical evidence on QMS practices in the Libyan manufacturing context and provides barriers and key success factors for policymakers and industry leaders to strengthen quality management implementation and sustainability

Keywords: Quality management systems, Libyan manufacturing sector, Barriers, success factors.

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دراسة حول تطبيق أنظمة إدارة الجودة في قطاع التصنيع الليبي

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الملخص

تلعب أنظمة إدارة الجودة (QMS) دوراً حيوياً في تعزيز الأداء المؤسسي وجودة المنتجات، والقدرة التنافسية داخل قطاع التصنيع. وفي الاقتصادات النامية مثل ليبيا، يظل التطبيق الفعّال لأنظمة إدارة الجودة تحدياً كبيراً بسبب القيود الهيكلية والإدارية والبيئية. تهدف هذه الدراسة إلى بحث مدى تطبيق أنظمة إدارة الجودة في الشركات الصناعية الليبية (LMCs)وتحديد العوامل الرئيسية المؤثرة في تنفيذها. تم اعتماد منهج البحث المختلط، الذي يجمع بين الاستبيانات والمقابلات مع المدراء والمتخصصين في الجودة في عدد من الشركات الصناعية المختارة. كشفت النتائج أنه على الرغم من تزايد الوعي بمبادئ أنظمة إدارة الجودة، وخاصة معايير ISO 9001 ، فإن مستوى التطبيق العملي لا يزال متوسطاً إلى منخفض. وتشمل أبرز المعوقات ضعف التزام الإدارة العليا، وعدم كفاية تدريب الموظفين، وضعف ثقافة الجودة، ونقص الوعي بأنظمة إدارة الجودة. تسهم هذه الدراسة في تقديم أدلة تجريبية حول ممارسات أنظمة إدارة الجودة في السياق الصناعي الليبي، وتحدد العوائق وعوامل النجاح التي يمكن أن يستفيد منها صناع السياسات وقادة الصناعة لتعزيز تنفيذ أنظمة إدارة الجودة واستدامتها.

الكلمات المفتاحية: انظمة ادارة الجودة، قطاع التصنيع الليبي، العوائق، عوامل النجاح.

Introduction

Within the last decade of the 20th century, Libya realized that the world had been rapidly changing. It is a world in which the international economy has moved from a geographical framework to a framework of virtual space. There are no political limits that can stand against these dynamic changes; these economic developments have, at present, encouraged countries to move towards globalization where self-dependent economies are no longer

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feasible. This is exactly what is happening now in Libya, where serious steps have been taken by giving the highest priority to restructuring the Libyan economy. Through this process, Libya is also promoting local products to assist in diversifying economic activities, in order to help accelerate the process of Libya joining the World Trade Organization (WTO). Towards this goal, Libya has recently approved a series of important laws dealing with foreign investors and companies as well as a series of resolutions being undertaken by the government [1].

These fundamental changes have caused Libyan organizations to move out gradually from under the government umbrella, which gave them a monopoly of products and services. In such a situation, Libyan organizations need to focus more on quality, as it is one of the crucial standards used to measure success levels. Libyan organizations have started to believe that it is vital to invest current resources into the use of quality improvement programs, such as the adoption of the quality management systems of ISO 9001 and other quality approaches [2]. Quality management has a major contribution to product quality as well as other performance objectives such as productivity, cost and on time delivery. It is also capable of being applied as a competitive tool when linked to manufacturing strategy. Libya's manufacturing sector has historically relied on oil and gas exports; however, the need for diversification is pressing. Quality systems play a crucial role in enhancing competitiveness and facilitating growth.

It is proposed that all the benefits of quality management techniques could be transferred to the Libyan organisations, particularly those manufacturing companies that are growing at a very slow speed and face intense global competition. However, to the best of the researcher's knowledge, Libyan Manufacturing Companies (LMCs) suffer from a lack of implementation of modern quality management systems and contemporary techniques. Therefore, this paper seeks to investigate the implementation of quality management systems in Libyan manufacturing companies and reveal the barriers and key success factors for its implementation.

Literature Review

Najeh and Chakib[3] carried out a study in some developing countries and Libya was among them. The study was about

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comparing and contrasting the quality vision and practice. The selected sample of Libyan organizations was from the oil sector only, which revealed that the proportion of manufacturing companies in Libyan oils firms constituted just 39 % of the total study sample. This was compared to the other countries in the study where the selected sample were from different sectors including (manufacturing). Therefore, the Libyan sample was inadequate to represent the whole culture of quality to all Libyan industrial sectors.

The study showed the factors that were identified as critical which are: supplier-customer chain, processes improvement, problem solving, and quality management system. On the other hand, factors, which were considered no critical, are - quality approaches, support services, benchmarking based on competition, business process, and closer supplier relationship management. However, the scope of this study was narrow (oil sector only) focusing on quality factors rather than on what are the principles and practices of quality management to what extent they are successfully implemented. Therefore, there is clearly need to investigate the extent to which quality management practices are being implemented in Libya, especially in the manufacturing sector and what areas need to be further improved.

Abusa and Gibson [4] revealed that Libyan companies are still struggling to effectively adopt TQM. Positive, significant correlations among TQM elements, but overall low implementation. ISO-9001 status and company size had no significant influence on TQM element levels

Shokshok and Shokshk [5] stated specific weaknesses faced by Libyan companies include the absence of tangible improvements resulting from previous efforts, insufficient management commitment, inadequate government support, incentives, and resources, misalignment with the company's vision and mission, limited financial resources, and a lack of technological infrastructure.

Quality management systems have evolved over time, with ISO 9001 becoming one of the most widely adopted standards worldwide. In the context of developing countries, including Libya, effective quality systems are essential for enhancing product reliability and customer satisfaction TQM also emphasizes the

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importance of organizational culture in achieving quality objectives [6,7]

Methodology and Data Collection

This study employed a mixed-method approach, by conducting interviews to collect qualitative data followed by development of a questionnaire to obtain the quantitative data. This mixed data collection method is known as 'the exploratory sequential design [8]. The survey targeted manufacturing firms across various industries, while interviews with industry experts provide insights into the practical challenges and opportunities related to quality systems.

Data were collected as mentioned earlier from interviews and a questionnaire, a semi-structured interview with open-ended questions were chosen for conducting the interviews. The main targeting interviewees were those who are responsible for quality management in their firms such as quality managers and technical managers and also managers who are responsible for decision making, such as executives and chairmen. Ten interviewees were randomly selected from different LMCs to allow more varied and comprehensive feedback to be obtained, while the questionnaire were distributed to multi manufacturing companies, ensuring a representative sample across different sub-sectors. questionnaire included questions related to the adoption of quality systems, the perceived impact on operational efficiency, and barriers to implementation. A five-point Likert scale was used in the questionnaire and had been pilot tested. Instrument validity and reliability was also checked.

Data Analysis

Interview Data Analysis

There is no standardized method for analyzing qualitative data. One frequently used technique is to quantify it, in other words, convert the qualitative data into numerical data. This can be informally done, when the purpose is to count the frequency of certain events or of particular reasons that have been mentioned by interviewees [9,10]. Punch [11] said that quantifying qualitative data offers the capacity to present a great amount of data, and it is a very useful

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supplement to the most significant means of analyzing qualitative data. Thus, in this study, it was decided to quantify qualitative data gained from the interviews. In addition, some valuable statements from the interviewees were quoted where appropriate to support and enhance the study results.

The data collected from the interviews revealed that there is a lack of quality management systems implementation in Libyan manufacturing companies. However, in analyzing the interview data, factors were categorized into two themes, factors that impede the implementation of QMS in LMCs (barriers), and factors that could enable the adoption of QMS in LMCs (enablers). It is worth mentioning that some interviewees believe that in state-owned companies, where making profits is not within their priorities, and also in small size companies, QMS is not essential. On the other hand, some interviewees argued that the absence of regulations to force the adoption of quality techniques have made companies less interested in following up with the latest quality techniques and tools.

Questionnaire Data Analysis

75 questionnaires were distributed; the number of received usable questionnaires were 54. Once assuring that data is reliable and valid, an empirical analysis of quantitative data was applied by using SPSS Software. Data was divided into four main subsections. In the first subsection general information about respondents and their companies was described utilizing a descriptive and demographic analysis to provide a summary using sum, frequencies, and percentages. Then the second part dealt with the quality management systems back -ground to the responding companies to explore the current quality management system and training courses. The third part was important to achieve the study`s aim to identify the reasons and barriers impeding the implementation of QMS in LMCs. Finally, the fourth part factors which have an influence on the interviews identified barriers, these factors were highlighted and ranked according to their average Mean scores.

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Results and Discussion

Interview Findings

There is a wide range of different barriers facing companies around the world in implementing QMS. By using the exploratory sequential design, starting by conducting interviews to help narrow down the main reasons behind the lack of QMS use in LMCs, only four key barriers were highlighted as being encountered by LMCs. With a percentage of difference in terms of their significance, these factors were identified, and placed in descending order according to their importance, namely:

1. Lack of top management commitment (100%)
2. Lack of training (90%)
3. Lack of awareness and knowledge about QMS (80%)
4. Culture effect (resistance to change) (70%)

As lack of top management commitment was one of the most repeated factors. It is apparently one of the major impediments to the implementation of QMS in LMCs, most interviewees said that the lack of top management commitment is usually followed by undesirable consequences such as lack of motivation and incentives, lack of employees' involvement, resistance to change, and lack of following up with quality techniques and tools. It can be concluded that most interviewees believed that top management neither participates in quality activities nor encourages others to do it, top management is always stuck in their offices with their own agenda, which is usually irrelevant to the work programs

It is worth mentioning that these findings are consistent with other studies such as Okonta, et al [12], Mallick et al. [13], Hokoma et al. (*Quality and Manufacturing Management)* [14], Arshida & Agil (*Critical Success Factors for Total Quality Management)* [15], Abu-Sharida, and Musa, (*Challenges of Implementing ISO 9001 Quality Management System in Libyan Industrial Organizations)* [16],Rahman et al. (*Barriers and Benefits of TQM)* [17].

The interview findings also showed that some barriers that were found in the literature review do not face LMCs as reasons for not implementing QMS, but they can, in fact, be considered as success

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factors or enablers for QMS implementation. These factors, as identified in this study, are placed in descending order, namely:

1. There is sufficient time to implement QMS (100%).
2. Company's customers are not happy and satisfied (90%).
3. QMS is not a complicated technique and we are certain about its results and benefits to our company (80%).
4. There are sufficient financial resources (70%).
5. QMS is not costly to our company (70%).
6. We are not happy with the current quality system (60%).
7. There is good communication between all departments in the company (60%).

Questionnaire Findings

1- General information about respondents and their companies

Data revealed that highest ratio of respondents 40.74 % were aged between 40-49 years, they hold different levels of positions, and also the majority of respondents were well-educated, with more than 50% holding a bachelor degree and about 60% had an experience of more than 16 years; this should enable them to provide sufficient and accurate information, the targeted population were from medium and large size companies with value of 64.81% and 35.18 % respectively. 51.85% of the responding companies were public (state-owned), 33.33 % of them were private companies, and 14.81 % were joint venture, represent a wide range of manufacturing types (food, chemical, mechanical, building materials, furniture, plastic).

2- Quality management systems back -ground

2-1 Current quality management system in the company

This section was specifically designed to investigate what quality management systems are currently implemented in LMCs, the respondents were asked to tick the current quality system implemented in their companies. The options given were (ISO 9001; TQM; Quality control; Six sigma; Lean manufacturing; None; Other, please specify…). Figure 1 shows that quality control is the most common technique in LMCs, with a value of 35.18%, followed by 11.11% of the sample of companies that use ISO 9001, and then 5.55% for TQM. It can also clearly be seen that a high ratio of 48.14 % of the surveyed companies have no quality system implemented. These figures confirm what the researcher mentioned earlier, that

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LMCs suffer from a lack of implementation of modern quality management systems and contemporary techniques.

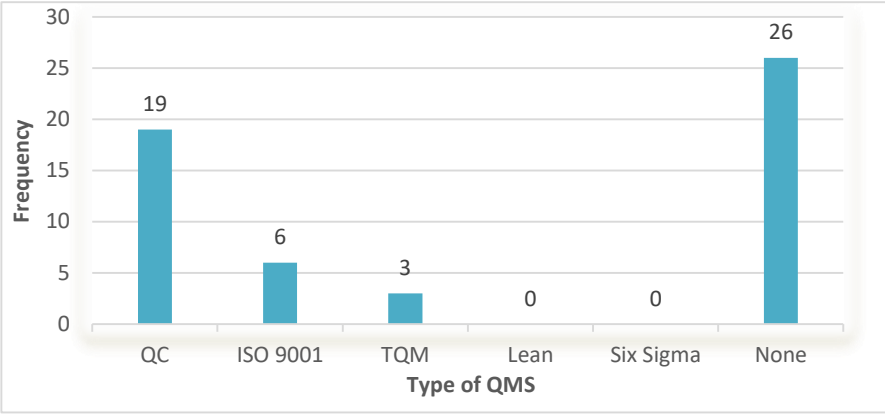

Figure 1: Current quality management systems in the companies

2-2 Quality training in the company

Whether or not a company runs quality training for employees? This question was designed to check and identify if LMCs run quality training for employees, as the lack of running different quality programmes could be one of the issues that LMCs suffer from. Respondents were asked to tick (Yes☐ No☐ I do not know ☐) if their company run any kind of quality training. Figure 2 shows that 51.8 % of respondents said ‘‘No’’, 44.44 % said ‘‘Yes’’, and 3.7 % said ‘‘Do not know’’.

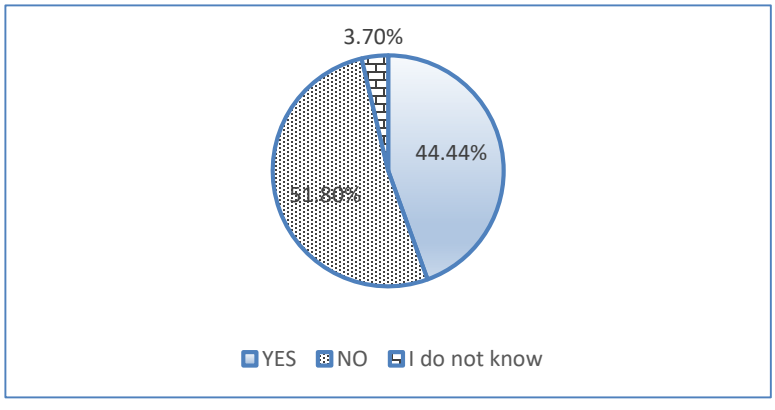

Figure 2: The company runs quality training

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Type of quality training

Investigation to the previous question went further, respondents who said ‘‘Yes’’ were asked to tick what kind of training their companies run. Options given were (ISO 9001; TQM; Quality control; Six sigma; Lean manufacturing; Other, please specify…). Figure 3 shows that 45.83 % of them run quality control training and that reflects the fact that quality control is the most used technique in LMCs, followed by ISO 9001 training, which represents 33.33% (8 companies). It can be noticed that the number of companies that run ISO 9001 training is greater than the number of companies that have implemented ISO 9001(6). When the researchers probed more, they realized that there were some companies that are preparing to obtain the ISO 9001, so they have already started ISO training. The figure also shows that 12.5% of the surveyed companies run TQM training and 8.33 % of them run some other quality training. These figures reflect and show that LMCs mainly run training programmes for the same quality techniques that have been implemented.

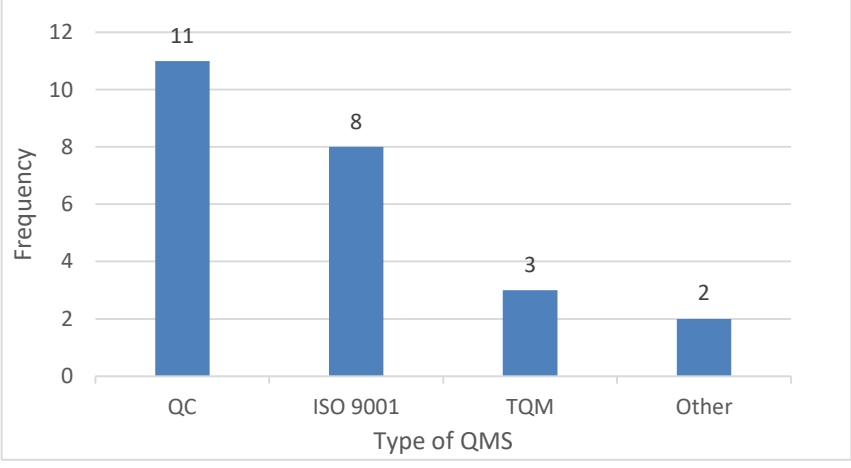

Figure 3: Type of quality training

3- Reasons/ barriers for not implementing QMS in LMCs

A list of eleven factors which were extracted from the literature review concerning reasons and barriers impeding the implementation of QMS was presented to respondents, and they

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were requested to rate the degree of concern on a five-point Likert scale. Hence, A Mean above 3 shows an agreement with the statement while a Mean below 3 shows an overall disagreement. Table 1 shows the distribution of all the eleven factors around the average Mean score.

Table 1: Reasons/ Barriers for not Implementing QMS in LMCs

Rank	Factor	Barrier / Reason	Mean	Std.Dev.
1	8	Lack of QMS training courses	4.378	0.572
2	3	Lack of QMS expertise and specialists in our company	4.256	0.663
3	2	Lack of knowledge and awareness about QMS in our company	4.167	0.604
4	1	Lack of top management commitment	3.656	0.926
5	9	Culture effect (resistance to change)	3.611	0.956
6	4	QMS is a complicated technique and we are uncertain about its results and benefits	2.889	0.741
7	6	QMS is too costly to our company	2.844	0.686
8	7	Lack of financial resources	2.711	1.220
9	5	There is no good communication between all departments in the company	2.622	1.001
10	11	There is no reason	2.311	0.967
11	10	Insufficient time for implementation	2.144	0.829

It can be seen from table 1 only ***five key barriers*** are facing LMCs to the implementation of QMS, with a difference in terms of their Mean average score, these barriers were identified, and placed in descending order according to their Mean score. Namely: ‘***‘‘Lack of QMS training courses’’*** was ranked as the first barrier to QMS implementation with a Mean of 4.378, followed by ***‘‘Lack of QMS expertise and specialists in our company’’*** with a Mean of 4.256. Then ***‘‘Lack of knowledge and awareness about QMS in our company’’*** with a Mean of 4.167, the fourth barrier was ***‘‘Lack of top management commitment’’*** with a Mean score of 3.656, then ***‘‘Culture effect (resistance to change)’’ with*** a Mean score of 3.611. Figure 4 shows the distribution of all the eleven factors

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around the average Mean score (3) which shows an agreement or disagreement with the statement.

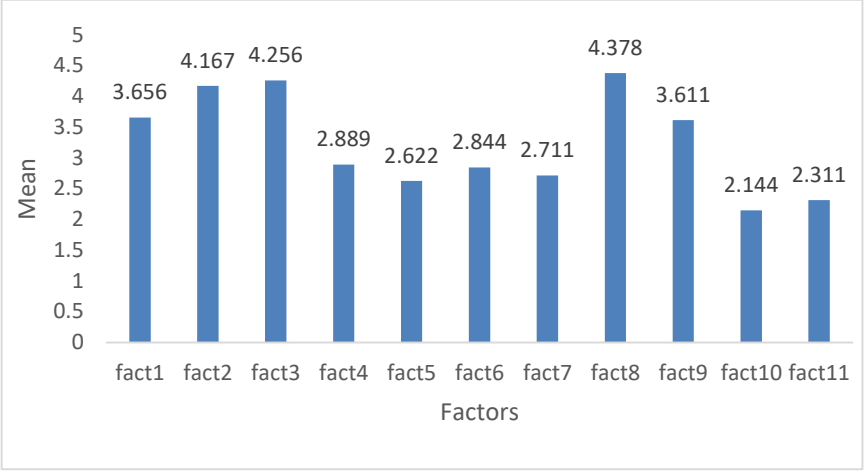

Figure 4: Distribution of factors around the Mean average score 3

It can also be seen from figure 4 that six factors out of eleven were under the Mean average score of 3, this means that respondents disagreed with these statements, in other words, these factors cannot be considered as barriers to LMCs, but they could, in fact, be considered as success factors or enablers for QMS implementation. These factors are ***''QMS is a complicated technique and we are uncertain about its results and benefits''*** with a Mean of 2.889. ***''QMS is too costly to our company''*** Mean score 2.844. ***''Lack of financial resources''*** Mean score 2.711. ***''There is no good communication between all departments in the company''*** Mean score 2.622.***''There is no reason''*** Mean score 2.311, and then ***''Insufficient time for implementation''*** with Mean score of 2.144. These findings support the previous reported interview outcomes with a slight difference in the order. The findings also achieved one of the most important objectives of this study, which is to identify the reasons and barriers behind the lack of QMS implementation in LMCs.

The identified barriers were consistent with other previous studies which found ***''Lack of QMS training courses''*** is a barrier to the implementation of QMS. Such as Mallick et al. [13], Raghunath & Jayathirtha [18] The outcome is also consistent with previous

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studies to LMCs such as Al-Mijrab and Elwalda (*An investigation into the barriers affecting the adoption of ISO 9001)* [19], Leftesi (*The Diffusion of Management Accounting Practices)* [20], Sherif (*Total Quality Management and Construction Project Management)* [21], who found that lack of training programmes is one of the issues to LMCs.

''Lack of QMS expertise and specialists in our company'' was identified in this study as a barrier to LMCs, this outcome is consistent with Rawshdeh, Mustafa, et al [22], Maruta et al. [23],Taner et al. [24] who found that lack of expertise and specialists is one of the barriers to the QMS implementation.

''Lack of knowledge and awareness about QMS in our company'' was also identified in this study as a barrier to LMCs. This outcome is consistent with Rahman et al.(*Barriers and Benefits of Total Quality Management)*[17], Leftesi(*The Diffusion of Management Accounting Practices)* [20], Sherif (*Total Quality Management and Construction Project Management)* [21], who found lack of knowledge and awareness of advanced techniques to be one of the barriers in LMCs.

The forth reason for not implementing QMS in LMCs was ***''Lack of top management commitment''***, this was also identified by; Okonta, et al [12], Mallick et al. [13], who found that lack of top management commitment is a barrier to QMS implementation, and the finding is also consistent with other studies related to LMCs, such as Hokoma et al.(*Quality and Manufacturing Management)* [14], Abu-Sharida, and Musa (*Challenges of Implementing ISO 9001 Quality Management System in Libyan Industrial Organizations)* [16], Sherif (*Total Quality Management and Construction Project Management)* [21].

''Culture effect (resistance to change)'' came fifth as one of the barriers impeding the implementation of QMS in LMCs. This outcome is consistent with Mallick et al. [13], Raghunath & Jayathirtha [18], who found that resistance to change is a barrier to six sigma adoption, as well as by other studies related to LMCs such as; Rahman et al.(*Barriers and Benefits of Total Quality Management)* [17], Al-Mijrab and Elwalda (*An investigation into the barriers affecting the adoption of ISO 9001)* [19].

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4-Influencing factors

This section contains twenty-four factors which have an influence on the barriers that were identified from the interview stage. These factors were ranked according to their average Mean scores. Correlation matrix analysis was carried out to check the correlation between the identified barriers and their effect on each other

4-1 Top management commitment

This analysis was carried out to identify the reasons behind the lack of top management commitment. Six factors were presented to respondents, and they were requested to rate the degree of concern on a five-point Likert scale

Table 2: Factors Influencing Top Management Commitment

Rank		Factor	Mean	Std.Dev.
1	TMC1	Top management have a lack of knowledge about QMS	3.747	0.970
2	TMC5	There are wrong people in the wrong positions	3.538	1.024
3	TMC2	Top management do not pay attention to introducing QMS	3.462	1.003
4	TMC6	There is a lack of leadership and effective leaders in your company	3.319	1.122
5	TMC4	Top management do not allocate adequate resources and time for quality improvement	3.11	1.109
6	TMC3	Top management have no clear quality vision	3.033	1.196

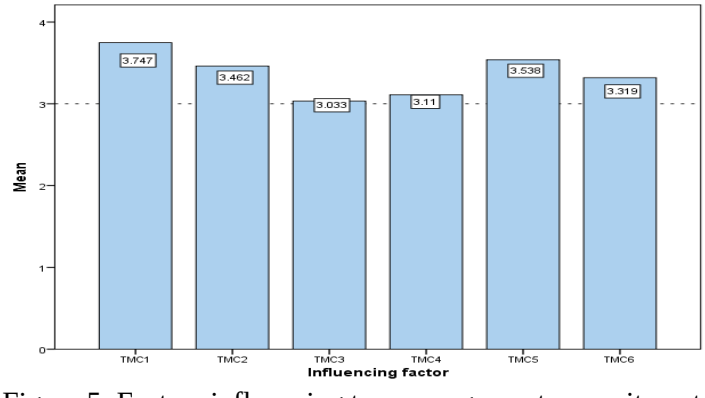

Figure 5: Factors influencing top management commitment

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From the above table 2 and figure 5, It can be seen that the factor with greatest influence on lack of top management commitment was *''Top management have a lack of knowledge about QMS* with a Mean score of 3.747. Then *''There are wrong people in the wrong positions''* came second with a Mean score of 3.538, followed *by ''Top management do not pay attention to introducing QMS''* with a Mean score of 3.462. The fourth reason was *''There is a lack of leadership and effective leaders in your company''* with a Mean score of 3.319. The fifth was *''Top management do not allocate adequate resources and time for quality improvement''* with a Mean score of 3.11, the last reason was *''Top management have no clear quality vision''* with a Mean score of 3.033. It is worth mentioning that respondents agreed with all the six factors as the Mean scores were above 3 for each factor, which means top management suffer from all of these six drawbacks.

These findings are similar to the findings of other studies which were carried out on Libyan organizations such as; Safar and Bielova [25] found that there is no effective leadership, wrong people in the wrong position, lack of top management support, and top management do not pay enough attention to quality programmes as well as they have poor understanding of quality systems and no clear vision. Al-Mijrab and Elwalda [19] found in LMCs there is a lack of top management support to quality programmes, wrong people in the wrong position. Alkisher [26] found that top management do not provide adequate resources to support introducing and implementing quality programmes. Elfaituri [27] found Top management do not allocate adequate resources and time for quality management efforts, Top management have no clear quality vision, and this also was found by Sherif [21].

4-2 Training courses

The same analysis was carried out to find out the reasons behind training courses being a barrier to QMS implementation to LMCs.

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Table 3: Factors Influencing Training Courses

Rank		Factor	Mean	Std.Dev.
1	TC2	There is a lack of QMS trained professionals in our company	4.489	0.523
2	TC1	There are no QMS training programmes in our company	4.426	0.538
3	TC3	There is a lack of QMS training providers in Libya	3.383	0.745
4	TC6	The training managers are not effective and capable	2.926	1.108
5	TC4	In general, there is a lack of training programmes in our company	2.83	1.009
6	TC5	There is no training department in your company.	2.319	1.087

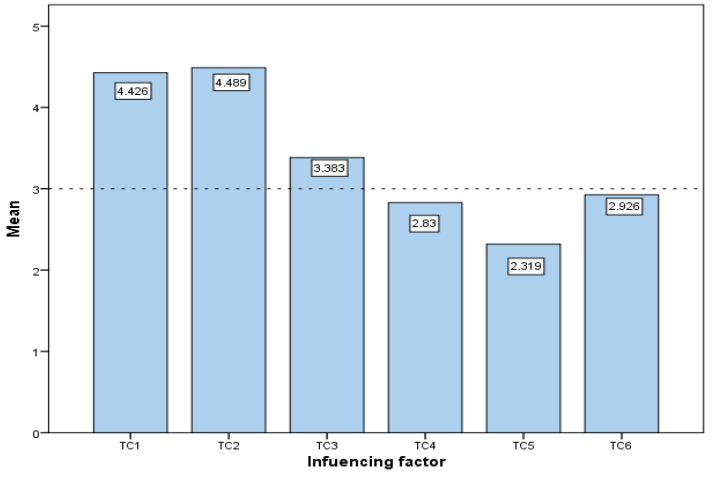

Figure 6: Factors influencing training courses

The above table 3 and figure 6 show that only three factors out of six were identified as being impeding factors to training programmes. The first impeding factor with a Mean score of 4.489 was *''There is a lack of QMS trained professionals in our company''*. Followed by *''There are no QMS training programmes in our company''* with a Mean score of 4.426, then *''There is a lack of QMS training providers in Libya''* with a Mean score of 3.383, while the other three factors were not considered as impeding factors to the training courses because their average mean scores were below 3. These factors were *''The training managers are not effective and capable''* Mean score 2.926, *''In general, there is a*

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lack of training programmes in our company'' Mean score 2.83, and then *''There is no training department in our company''* Mean score 2.319.

These training impeding factors are similar to other studies on Libyan organizations by; Al-Mijrab and ELwalda [19] who found lack of expertise including absence of Libyan professionals and experts in quality management programmes, no accredited local quality agencies, and lack of trust in Libyan training programmes were impeding factors to training programmes. Safar and Bielova [25] also found lack of expertise as one of the obstacles to training and quality systems, he also found that training managers are ineffective, which is slightly different from the findings of this study. The findings are also similar to other global studies on QMS such as; Taner et al. [24] , Rawshdeh, Mustafa, et al [22] , Maruta et al. [23], who all found lack of dedicated professionals and inadequate specialized QMS training are impeding factors to QMS implementation.

4-3 Lack of knowledge and awareness about QMS

To identify the reasons behind the lack of knowledge about QMS, respondents were requested to agree or disagree with the following five factors

Table 4: Factors Influencing Lack of Knowledge and Awareness about QMS

Rank		Factor	Mean	Std.Dev.
1	LKA2	There is a lack of information and awareness about QMS in our company	4.245	0.497
2	LKA1	Most employees and managers in our company have a lack of knowledge about QMS	4.223	0.628
3	LAK3	There is a lack of QMS conferences, seminars, workshops and publications	4.085	0.600
4	LKA5	There is a lack of governmental bodies who support, make knowledge and awareness about QMS	3.957	0.801
5	LKA4	There is a lack of local consultants and expertise in QMS	3.628	0.762

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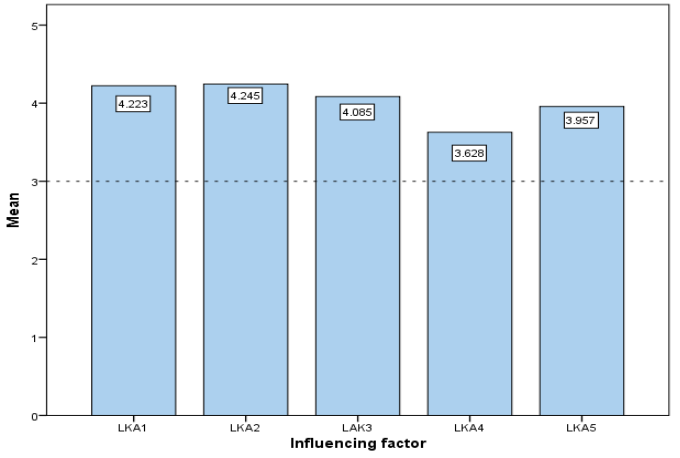

Figure 7: Factors influencing lack of knowledge and awareness about QMS

It can be seen from the above table 4 and figure 7 respondents agreed with all the five factors (all Mean scores above 3) which means that the lack of knowledge about QMS might be due to these factors. The first two reasons to the lack of knowledge about QMS were *''There is a lack of information and awareness about QMS in our company''*, and *''Most employees and managers in our company have a lack of knowledge about QMS''.* Both Mean scores were 4.245 and 4.223 respectively. Followed by *''There is a lack of QMS conferences, seminars, workshops and publications''* with a Mean score of 4.085. The fourth drawback was *''There is a lack of governmental bodies who support, make knowledge and awareness about QMS''* with a Mean score of 3.957, then *''There is a lack of local consultants and expertise in QMS''* came last with a Mean score of 3.628.

These findings are similar to other studies on Libyan organizations such as; Elfaituri [27] in his study found that seminars and workshops involving quality systems issues were insufficient. Sherif [21] found that employees have a lack of knowledge and understanding of quality systems due to the lack of awareness about these programmes, and no government support.

4-4 Culture effect (resistance to change)

Average Means score analysis was also applied to identify the reasons behind resistance to change as being one of the key barriers

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to QMS implementation to LMCs. Seven factors were presented to respondents and they were requested to rate degree of concern on a five-point Likert scale.

Table 5: Factors Influencing Resistance to Change

Rank		Factor	Mean	St.Dev.
1	RC4	There is a lack of knowledge about the advantages and benefits of the new techniques	3.543	0.906
2	RC5	People believe that a new technique will threaten their positions	3.435	0.975
3	RC7	There is an unwillingness to change from the existing system	3.391	0.916
4	RC3	There are difficulties in accepting new techniques & approaches in our company	3.38	0.940
5	RC6	People believe that a new technique will increase the workload and make it too complicated	3.337	0.965
6	RC2	The culture of resistance to change is spread throughout the company	3.326	0.979
7	RC1	In general, there is no desire to change	2.98	1.005

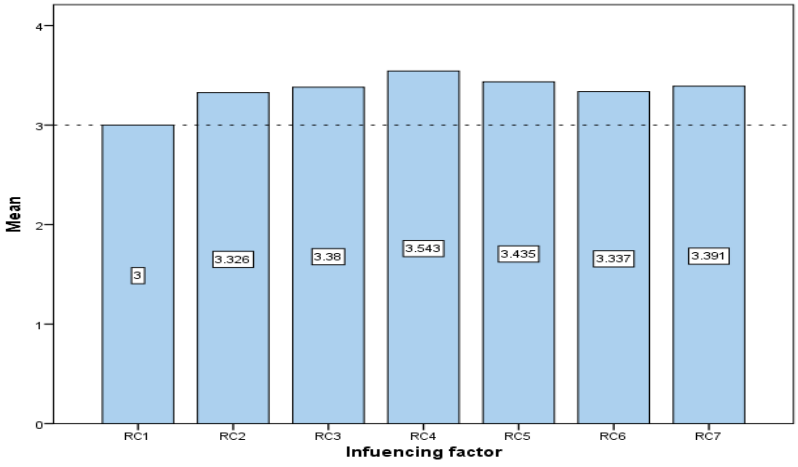

Figure 8: Factors influencing resistance to change

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The above table 5 and figure 8 reveal most respondents agreed that *''There is a lack of knowledge about the advantages and benefits of the new techniques''*. It was the first reason for resistance to change with a Mean score of 3.543. Then *''People believe that a new technique will threaten their positions''*, *''There is an unwillingness to change from the existing system''*, *''There are difficulties in accepting new techniques & approaches in our company''*, *''People believe that a new technique will increase the workload and make it too complicated''* came second, third, fourth, and fifth with Mean scores of 3.435, 3.391, 3.38, 3.337 respectively. The last reason was *''The culture of resistance to change is spread throughout the company''* with a Mean score of 3.326. It is arguably that respondents disagreed with the statement *''In general; there is no desire to change''* as being one of the reasons behind resistance to change, Mean score was 2.98.

These findings are similar to the findings of other studies on Libyan organizations such as Safar and Bielova [25] found that managers and employees did not have a full understanding and knowledge about the new quality system adopted, so they tend to resist it, they also think a new quality system may affect them personally, and they might lose their job or position, because they are unqualified and inexperienced. Sherif [21] found that middle managers and employees did not want to follow the procedures required by the new system and they were happy with the current one, because they did not want to have new responsibilities and extra work, he attributed this to the lack of top management awareness about the requirements of the new quality system. Al-MIjrab and Elwalda [19] found, in many cases, employees were reluctant to have any changes made to their work processes as they envisaged the new system would be too complicated to understand, he also found that employees resist change because they fear things or events they do not know or understand.

Correlation Analysis

Correlation analysis was applied to check and measure the correlation between QMS barriers.

A positive correlation between two variables means, if one increases, the other one will also increase. On the other hand, a

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negative correlation indicates if one increases, the other one will decrease. Table 6 shows the correlation between the QMS barriers.

Table 6: Correlations between QMS Barriers

			TMC	TC	LKA	RC
Spearman's rho	TMC	Correlation Coefficient	1.000	.577**	.345**	.602**
		Sig. (2-tailed)	.	.000	.001	.000
		N	96	96	96	96
	TC	Correlation Coefficient	.577**	1.000	.308**	.486**
		Sig. (2-tailed)	.000	.	.002	.000
		N	96	96	96	96
	LKA	Correlation Coefficient	.345**	.308**	1.000	.256*
		Sig. (2-tailed)	.001	.002	.	.012
		N	96	96	96	96
	RC	Correlation Coefficient	.602**	.486**	.256*	1.000
		Sig. (2-tailed)	.000	.000	.012	.
		N	96	96	96	96

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

TMC: Top Management Commitment. TC: Training Courses
LKA: Lack of Knowledge about QMS. RC: Resistance to Change

It can be noticed from table 6, that all of the correlations are positive and statistically significant ($p < 0.05$). It can also be seen from the table that the correlation coefficient (r) values were between 0.3-0.6 which indicates good relationships between all variables; the highest correlations were between top management commitment, resistance to change and training courses (r), values were 0.602, 0.577 respectively. This was expected which reflects and supports what interviewees mentioned about top management when they said ‘‘lack of top management is usually followed by undesirable consequences’’. This means when top management support the adoption and implementation of quality techniques the other barriers (training courses, lack of knowledge about QMS and resistance to

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change) will be tackled and improved as these barriers were evidently positively correlated and had a significant multi collinearity.

Conclusion

This study investigated the implementation of Quality Management Systems (QMS) in Libyan manufacturing companies, with the aim of assessing current practices, identifying key challenges, and revealing the key success factors. The findings indicate that although awareness of QMS concepts—particularly ISO 9001 standards—exists among Libyan manufacturers, the overall level of implementation remains limited and inconsistent across the sector.

The research highlights several critical barriers to effective QMS implementation, including weak top management commitment, inadequate employee training, cultural effects, and the absence of strong knowledge and awareness about QMS. Additionally, external challenges such as insufficient regulatory support and unstable political and economic conditions further hinder systematic adoption of quality management practices. Nevertheless, some organizations that demonstrated stronger leadership involvement, continuous improvement initiatives, and employee engagement experienced measurable improvements in product quality, operational efficiency, and customer satisfaction.

In conclusion, the successful implementation of QMS in Libyan manufacturing companies requires a strategic and long-term commitment from top management, supported by structured training programs and continuous performance evaluation. Policymakers and industry stakeholders also play a vital role in promoting quality standards through supportive regulations and incentives. Strengthening QMS adoption will not only enhance the competitiveness of Libyan manufacturing firms but also contribute to the sustainable development of the national industrial sector.

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