Recommendations for the Implementation of ISO 9001:2015 in the Manufacturing Industry of Pakistan

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Abstract-ISO 9001:2015 is known as the highest quality management standard, enhancing customer and company satisfaction. While the manufacturing industry is playing a vital role in Pakistan’s GDP, the implementation of ISO 9001:2015 is not widespread. This study aims to examine the factors that hinder the implementation of ISO 9001:2015 in Pakistan’s manufacturing industry and recommend suggestions to overcome them. An in-depth literature review identified 32 general factors that hinder the implementation of ISO 9001:2015. A structured questionnaire was designed and distributed to 135 respondents to examine the factors hindering the implementation of ISO 9001:2015 in Pakistan’s manufacturing industry. The gathered data were analyzed using the average index formula, and 8 significant factors were identified. These factors were used in the design of a semi-structured questionnaire distributed among high qualified and experienced respondents working in top managerial posts of manufacturing industries in Pakistan. The collected data were analyzed using content analysis. The findings can be helpful in the determination of recommendations regarding the implementation of ISO 9001:2015 in the manufacturing industries of Pakistan.

Keywords-recommendations; manufacturing industry; ISO 9001:2015; significant factors

I. INTRODUCTION

ISO 9001 is based on seven quality administration standards. These standards and codes are elementary convictions, imperatives, norms, and values that form a foundation that ultimately leads firms, companies, and organizations to performance enhancement. Before, on ISO 9001:2008, the principles were based on 8 quality administration standards, and later they were decreased to the seven quality executive code standards [1, 2]. The previous ISO 9001 edition referred to "products" which encompassed every kind of product, while the definition "purchasing" was altered to "control of externally provided processes, products, and services". So, the organizations that subcontract these functions or processes can ensure that their external suppliers comply with the definitions of the administration system [3]. The fundamental model could be interpreted as an organization or a company incorporating the new processes or implementing the new ISO standard. The PDCA cycle proposes a test preparation process that guides companies or organizations during changes or problem-solving procedures. The PDCA cycle includes test data and feedback [4]. The major parts of this sequence involve numerical procedure control strategies in the production process, simplifying quality enhancement. The PDCA cycle was applied by Japanese industrial engineers with enormous success. For instance, the Toyota Production System (TPS) is partially associated with PDCA scientific schemes and quality control [5]. In underdeveloped countries, fewer organizations are certified by ISO 9001 in comparison to the developed countries. As North American and European countries demand trustworthy infrastructure for the ISO 9001 list and registration, un compliant organizations cannot access these markets [6]. In many countries, the production sector has an important and vibrant position [7], while unsteadiness in the production division may cause turbulence on the whole economy. Several studies investigated the business sector in numerous, developing and developed, countries. Previous studies reported that although there is significant literature on the ISO 9001, only a few publications highlighted the problems, the issues, and the challenges of the ISO 9001, especially in the developing countries [8, 9]. Besides, progress in the implementation of ISO 9001 has been noticed in Middle East countries among numerous groups of companies in the United Arab Emirates, Kuwait, Lebanon, Qatar, and Oman, while Pakistani companies are trying to incorporate the codes and the standards to obtain the official certification.

Experimental research was carried out in Egypt, by selecting a sample of industrial organizations to explore the critical aspects of the application process of ISO 9001 [10]. The study highlighted the problems arising during the application of ISO 9001 principles, the administration body's actions to apply.
them successfully, and reported the necessity to alter the organizational system to conform. Hence, the employees' confrontation during the implementation of the standards was the most momentous issue faced. Furthermore, 11 probable elements that influence the application of ISO 9001 were recommended. The responders were requested to rate the intensity to which every dimension influenced them, and the scale ranged from "very helpful" to "not helpful at all". Thus, by investigating the outcomes, it was shown that the main advantageous elements in the successful application of ISO 9001:2015 were the commitment from apex supervision, the devotion of the company's in-house auditor, the well-designed system of the procedures, and the support from the mother organization or the partner.

A study conducted on ISO 9001 certified goods and manufacturing companies in Pakistan reported 8 prominent difficulties during the procedure [11]. Another study reported the following significant aspects that assist the ISO 9001 implementation in Pakistan: a well-organized process system, the commitment of higher management to the goal, and the useful views from domestic auditors [12]. Moreover, the major problems connected to the standards' application were the requirements to change the prevailing systems, the uncertainty reported by the employees concerning the alteration, and the lack of understanding and respect to the ISO principles illustrated by all departments. Furthermore, several problems and issues concerning the function of the quality structure factors in the Pakistani manufacturing field were reported, such as the inspiration for the registration, the cost of the official ISO certification and the training plans, the quality guidelines, the registration companies, the ISO advantages, and the formal auditing.

II. RESEARCH METHODOLOGY

The main objective of this study was to identify the significant factors which hinder the implementation of ISO 9001:2015 in the manufacturing industry of Pakistan and determine recommendations to overcome them. An in-depth literature review was conducted which identified 32 common factors that hinder the implementation of ISO 9001:2015 in the manufacturing industry worldwide. A structured questionnaire was designed and developed based on the identified common factors shown in Table I. The questionnaire was distributed among 130 experienced respondents who were working in the manufacturing industry of Pakistan. The respondent's experience profile is shown in Figure 1.

| TABLE I. FACTORS HINDERING ISO 9001 IMPLEMENTATION |
|-----------------------------------------------|
| Factors hindering ISO implementation | 1 | 2 | 3 | 4 | 5 |
| 1 Absence of ISO 9001 certification | | | | | |
| 2 Unwillingness to change organizational culture | | | | | |
| 3 Inflating the size of documents | | | | | |
| 4 Unwillingness to change work system | | | | | |
| 5 Weak Interdepartmental relationship | | | | | |
| 6 Management involvement | | | | | |
| 7 Insufficient knowledge in quality | | | | | |
| 8 Insufficient employee training | | | | | |
| 9 Training to top management by industries | | | | | |
| 10 Insufficient knowledge in quality | | | | | |
| 11 Insufficient Human Resources | | | | | |
| 12 Shortage of financial resources | | | | | |
| 13 ISO requirements as unrealistic | | | | | |
| 14 Absence of consulting boards | | | | | |
| 15 Difficult to implement ISO | | | | | |
| 16 Employee resistance | | | | | |
| 17 Top management involvement | | | | | |
| 18 Leadership from top management of company | | | | | |
| 19 Accountability in industry | | | | | |
| 20 Action orientation by industry | | | | | |
| 21 Credibility of the industry | | | | | |
| 22 Collaboration among Industries | | | | | |
| 23 Technology resources in the company | | | | | |
| 24 Big quality standards | | | | | |
| 25 Complexity in industries | | | | | |
| 26 Rules & Regulations | | | | | |
| 27 Training of staff | | | | | |
| 28 Previous record of Quality | | | | | |
| 29 Inspection and Testing | | | | | |
| 30 Unavailability of Quality Manuals | | | | | |
| 31 Employees behavior | | | | | |
| 32 Corrective and preventive action | | | | | |

The gathered data were statistically analyzed using the average index formula. Factors having an average score of more than 3.6 were marked as significant factors that hinder the implementation of ISO 9001:2015 in the manufacturing industry of Pakistan [13]. These factors are shown in Table II.

| TABLE II. LIST OF SIGNIFICANT FACTORS |
|--------------------------------------|
| No | Significant Factors | AI Score | Ranking |
| 01 | Absence of ISO 9001 Certification | 4.874 | 01 |
| 02 | Unavailability of Quality Manuals | 4.764 | 02 |
| 03 | Training of Staff | 4.697 | 03 |
| 04 | Top Management involvement | 4.518 | 04 |
| 05 | Employees behavior | 4.473 | 05 |
| 06 | Management involvement | 4.197 | 06 |
| 07 | Rules and Regulations | 3.954 | 07 |
| 08 | Difficult for implementation of ISO | 3.879 | 08 |

After identifying the significant factors, a semi-structured questionnaire was developed and distributed to 50 top managerial respondents to investigate recommendations for each significant factor hindering the implementation of ISO
9001:2015 in Pakistan's manufacturing industry. The academic qualification of the selected respondents is shown in Figure 2. Gathered data from the semi-structured questionnaire were analyzed using content analysis. Content analysis is a research method involving a thorough inspection of human conversation and a systematic, objective, quantitative analysis of human characteristics. After revising the collected data of every aspect that may be relevant, the coding frame was developed [14].

III. DATA ANALYSIS AND RESULTS

Cronbach's alpha measures the internal consistency or reliability of survey data, and it was utilized to evaluate the reliability of the data set using SPSS v27. As Cronbach's alpha was measured at 0.914, it was reliable to proceed further [15]. Eight significant factors were found to hinder the implementation of ISO 9001:2015 in the manufacturing industry of Pakistan. Content analysis revealed some recommendations and suggestions to counteract those hindering factors, as shown in Table III.

| Factor | Recommendations | Frequency |
|--------|-----------------|-----------|
| 1      | ISO certification should be clear | 47        |
| 2      | Process of ISO certification should be explained | 45        |
| 3      | Owner should be informed of ISO certification | 42        |
| 4      | Quality manuals should be available easily | 48        |
| 5      | Quality manuals should be explained | 45        |
| 6      | Quality manuals should be revised | 41        |
| 7      | 1. Training of staff | 48        |
| 8      | 2. Staff should be informed of ISO 9001 benefits | 45        |
| 9      | 3. Training should be done regularly | 41        |
| 10     | 1. Top management should be involved in ISO 9001 certification | 48        |
| 11     | 2. Brief should be given for advantages of ISO 9001 | 46        |
| 12     | 3. Top management should be given examples of ISO 9001 certified industries | 43        |
| 13     | 1. Employees should be informed of ISO 9001 advatages | 49        |
| 14     | 2. Employees should follow the standards of ISO 9001 | 46        |
| 15     | 3. Employees should be trained on ISO-9001 | 44        |
| 16     | 1. ISO certification training should be given to management | 48        |
| 17     | 2. Management should be informed of ISO 9001 advantages | 45        |
| 18     | 3. Quality manuals should be revised | 41        |
| 19     | 1. Rules and regulations should be informed to all staff | 48        |
| 20     | 2. Policies of ISO 9001 should be easily understood | 45        |
| 21     | 3. Training should be done regularly | 41        |
| 22     | 1. Clear concept of ISO 9001 should be explained | 48        |
| 23     | 2. Implementation procedure of ISO 9001 should be made easy | 46        |
| 24     | 3. Top management should be informed on the advantages of ISO-9001 | 43        |

IV. CONCLUSION

ISO certification plays an important role in any country's GDP development. The implementation of ISO 9001:2015 in Pakistan's manufacturing industry is a serious concern. Eight significant factors were found to hinder the implementation of ISO 9001:2015 in Pakistan's manufacturing industry. Recommendations and suggestions were pointed out by the qualified and experienced professionals of Pakistan's manufacturing industry. The proposed suggestions for the
implementation of ISO 9001-2015 include training to employees and administrative staff, and informing the top management of the advantages of ISO implementation. This study will be helpful for the implementation of ISO 9001-2015 in the manufacturing industry of Pakistan.

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