Improving Organizational Performance of Small and Medium Enterprises in Egypt through Promoting the Human Factors in Quality Management Systems

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Abstract

In this study, a sample of 96 Egyptian manufacturing small and medium enterprises (SMEs) was studied in relation to human factors (HFs) dependent quality management system (QMS). These were in three distinct industry groups: food & beverage, textiles & garments and leather & footwear. Human factors considered are derived from the seven criteria of the Egyptian Quality Award (EgyQA) and were used as the basis of a questionnaire survey.

The SWOT analysis for the survey results revealed the urgent need for developing governmental strategies which should focus on improving organizations performance, developing QMS and establishing total quality management (TQM) basic infrastructure for the Egyptian manufacturing SMEs.

This paper has provided two proposed practical framework models for improving the performance of the Egyptian manufacturing SMEs and for developing their competitiveness in both domestic and international markets, and thus activate their main role in the Egyptian economy.

Keywords: SMEs, QMS, EgyQA, Human factors (HFs), Organization performance

1. Introduction

In today's globalized economy system, the Egyptian manufactures' sector is facing a deteriorating position in terms of trade, as the Egyptian economy faces competitive pressures from international fronts. (Hawash, 2007).

Egyptian manufacturing SMEs, as the engine of growth in the economy, have a crucial need to continue to be a major supplier in the domestic market and to increase their exports and contribute to the Egyptian economy (El Mahdi, 2002). However, there are obstacles related to competition and most SMEs are not yet ready to compete for Quality markets. In order to survive in business, Egyptian manufacturing SMEs need to strengthen their businesses by upgrading organizational performances and producing high quality products at a low cost. The acquirement of a new paradigm for upgrading organizational performance and improving product quality is necessary.

Most of Egyptian manufacturing SMEs have not implemented QMS because of inadequate understanding of its principles and implementation processes as well as lack of development of organizational infrastructure,

particularly in Human Resource Management. It is time for an appropriate Quality Management approach for Egyptian manufacturing SMEs to be introduced in order to solve quality problems. Total quality management (TQM) is considered to be an important management philosophy, which supports the organizations in their efforts to obtain satisfied customers (Hansson, 2003).

Inevitably, the development of Egyptian manufacturing SMEs needs to be generated from government support which should assist them to strengthen their business performance immediately and then offer continuous support. Although the government has provided many assistance programs for developing Egyptian manufacturing SMEs' organizational performance, these programs seemed to be unproductive. There are several pillars required to be studied for achieving success of SMEs both in the internal and external markets, which have multi-dimensions. The Egyptian government, considering the economic importance of the SMEs, should assist them by formally adopting a productive QMS model for them to follow in order to help them achieving superior performance.

Therefore, in this paper, the identification of critical factors for successful implementation as well as the problems faced by SMEs in implementing quality management system (QMS) are important areas to be understood.

With a better understanding of these issues, it can be a groundwork for the development of an appropriate TQM framework for practical implementation by the SMEs. Moreover, the study results can be used as a guide for the government to develop effective assistance programs for SMEs through a comprehensive vision.

2. Theoretical aspect

Scarcity of academic research into TQM implementation in SMEs has been widely appreciated. According to Temtime (2003), "TQM research has concentrated on large firms. Little has been done on the TQM practices of small-and-medium-sized enterprises (SMEs), particularly in developing countries". Al-Khalifa and Aspinwall (2000), furthermore, assert that "despite the number of publications and the amount of research into TQM, little empirical work has been carried out in developing countries. This is particularly true of the Arab World". Authors such as Martinez *et al.* (1998) and Thiagaragan *et al.* (2001) reported in their studies that there is a lack of empirical studies concerning the critical factors affecting the effectiveness of TQM implementation in Western manufacturing firms. Mersha (1997) indicated, in his extensive review of literature on TQM, that most of the studies reflect the experiences of organizations in industrialized nations and concluded that the implementation of TQM by manufacturing firms in less developed countries (LDCs) is not an easy task, where there are many factors driving or resisting its implementation. Labib (2004) pointed out the absence of evidence of TQM application in African organizations. Salaheldin (2003), moreover, acknowledged that there has been little empirical research undertaken on TQM implementation in (LDCs) in general, and in Egypt in particular. Temtime and Solomon (2002), to conclude, report that "knowledge of the impact of TQM practices in SMEs in developing countries is very limited".

Main purpose of this paper was to increase the understanding of quality management status in SMEs and possibilities of further development towards TQM in SMEs. Since the experiences of TQM implementation in Egypt still rather limited, the previous experiences with QMS implementation is used as a departure point. This could be achieved through the following stages:

- Generating knowledge regarding SMEs' work towards improving their organizational performance. This will be accomplished through studying, analyzing and describing QMS implementation processes.
- Demonstrating the industrial organizational performance development needs by means of a case study in manufacturing SMEs (based on the human aspects in the TQM approach) and the need for the government to play a major role in establishing strategies for this development to occur.

This leads to establishing models for, and ways of, implementing supportable strategies for Egyptian manufacturing SMEs focusing on the human aspects which should be initiated and supported by the relevant government units.

3. Limitations

This paper was limited to study the manufacturing small and medium enterprises in Egypt which were defined as organizations with number of employees between 11 to 150. The study was conducted for three main industry groups: (1) Food & Beverage, (2) Textiles & Garments, and (3) Leather products (Clothing & Shoes) which were chosen because of their highly export potential and their significant influence on the Egyptian economy.

A questionnaire was used as a survey tool for acquiring data and interviews were conducted with the

manufacturing SMEs representatives at their work place, to obtain answers.

The study was limited to find out possibilities of developing SMEs beyond the basic standardized management system towards TQM in order to increase their organizational performance. The questions addressed in the survey were designed more on the principle and concept of TQM with focus on human factors component.

4. Population and sampling

To select enterprises for this survey, a simple random sampling in which every enterprise had the same chance of being selected was used. Using several data sources was an advantage to the effectiveness of the survey because the choice of enterprises was widened and the possible number of errors was reduced. A sample of 96 Egyptian manufacturing small and medium enterprises (SMEs) was selected in this study.

5. Questionnaire design

The contents of the questionnaire covered the scope of the study, *i.e.* the human factors in the TQM approach within selected Egyptian manufacturing SMEs. The focal point of the questionnaire was the human factors (HFs) section. These questions are generated from the criteria of the Egyptian Quality Award (EgyQA). These were: Strategic human resource planning, Human resource development, Employee empowerment, Performance management, Communication and information management, Leadership, and Continuous improvement.

6. SWOT analysis

Results and observations of this study were analyzed using the Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis, and a graphical model explaining positive and negative effects on the organizational performance of Egyptian manufacturing SMEs were performed.

7. Models developing

The SWOT analysis results were used as a guideline for developing (a) an approach for development stages of QMS (HFs) in the Egyptian manufacturing SMEs and (b) a model for developing human resources for establishing an effective QMS (HFs) that assists the Egyptian manufacturing SMEs to overcome their internal problems.

8. General enterprises information

8.1 Characteristics of the selected enterprises

The general characteristics results of the surveyed SMEs are summarized in the table 1.

8.2 Market focus

Most of SMEs focused only on domestic market (83.3%) while the rest of surveyed SMEs (16.7%) focused on both markets (domestic and international). No enterprise at all had focused on international market only.

8.3 Organizational structure

It was found that 58.3% had an unclear organizational structure chart, while 41.7% did not have any formal organizational structure at all.

8.4 Management styles

Only one main management style was used by Egyptian manufacturing SMEs. Top down management was the dominant style in the whole sample (100%).

9. The SWOT analysis of Egyptian manufacturing SMEs

The survey results (the answers in the studied questionnaire) were analyzed by the SWOT method in order to identify the Egyptian manufacturing SMEs' Strengths (S), Weaknesses (W), Opportunities (O), and Threats (T), in order to generate information about their effects on organizational performance and to determine if there is a need to support systems for the organization's development or a need for system improvement. This analysis was used as a guideline for developing the QMS model with focus on human factors.

The strengths and weaknesses in the studied Egyptian manufacturing SMEs are summarized in Table 2 and 3. Moreover, the opportunities and threats which affect SMEs are shown in Table 4 and 5.

Egyptian manufacturing SMEs have many strengths and weaknesses, and many opportunities and threats which are generated from the business environment and have effects on the whole organization. Strengths of SMEs were confirmed by the results of the questionnaire and should be supported, developed and promoted as a part of the basic infrastructure needed to achieve the criteria of the business excellence practices. Weaknesses indicated the problems and ineffective work systems which need to be solved and improved gradually to get a new and

better infrastructure. Opportunities mainly increase the number of international markets open to Egyptian manufacturing SMEs. Threats are mainly generated through competitive situations from the international trading competitors and free trade areas (FTAs). There is an increase in the number of overseas competitors most of which have a higher potential for international trade than Egyptian firms.

Generally, strengths and opportunities influence the organization's performance in positive ways and also support the development of a QMS. In contrast, the weaknesses and threats have negative effects on the organizational performance, which hamper a successful implementation of a QMS.

Effects of strengths, weaknesses, opportunities, and threats on the organizational performance in Egyptian manufacturing SMEs are presented in Table 6 and Figure 1.

10. Strategies for developing quality management system (QMS)

The results of the SWOT analysis were evaluated, and six related strategies for developing a QMS were recommended to be supported by the Egyptian government. These strategies should be established and implemented effectively in a wide range for the SMEs.

Strategy 1: Provision of reliable information and effective communication system

Accurate and up-to-date information needs to be communicated from the government to the SMEs, about government assistance programs and international and domestic markets. They should also be made aware of any threats to their competitive situation, marketing position and business performance compared with their competitors.

There is a need to widely promote government assistance programs on offer to support the SMEs to assist in increasing their business performance. Also, SMEs need to have easy access to reliable up-to-date market information, which helps them to clearly understand the market characteristics such as product and customer requirements and the trade law of the trading partners *etc*.

The government should take responsibility to communicate to SMEs by effectively utilizing different channels of communication such as: newspapers, brochures, booklets, media broadcasting, internet, *etc*. However, the information given by these means may still be insufficient to acquire international markets. This gap can be filled by tailoring information seminars and workshops for Egyptian manufacturing SMEs to understand market, competitive situation and customer requirements in any particular country.

Strategy 2: Provision of education program

Modernizing its workforce to compete in today's knowledge-based global economy has been a challenge for the Egyptian government. With few qualified information technology (IT) skilled teachers and little available content for business and IT education, the level of management and Information & communication technologies (ICT) skills among Egyptian businesses - especially SMEs - is limited.

Recognizing the need to improve education and skills among businesses, Egyptian government, in partnership with the World Economic Forum (WEF) and other multinational private and public organizations, launched the Egyptian Education Initiative (EEI) in 2005. However, this program needs to encourage cooperation among private organizations and public institutions, as well as supporting effective implementation of its framework to coordinate activities and deliver the desired results.

The lifelong learning and e-learning industry development tracks in particular required a business management and IT curriculum to meet the needs of SMEs through a framework which focus on:

- Enhancing and localizing the business essential course, and creating a comprehensive business management education curriculum for SMEs.

- Developing a nationwide infrastructure to deliver educational content.

An effective implementation of education strategy should prepare Egyptian SMEs to participate and thrive in the modern global economy.

Strategy 3: Provision of effective integrated SMEs development programs

The Egyptian government emphasizes on its economic policies to develop the manufacturing SMEs in order to increase their competitiveness. These policies need to be effective. Evidence that the current government's policies are unsuccessful in supporting SMEs was concluded from the survey results. Only 32.3% of SMEs had general experience of government assistance. Respondents indicated that they were only interested in very limited selected topics, not all on offer. SMEs need to be encouraged to trust government. All government programs need to be promoted broadly to all Egyptian manufacturing SMEs, even those in small towns and rural

areas. The communication channels to achieve this strategy should be selected carefully. The relationship among programs on offer, the requirements of SMEs and the business excellence performance should be regularly evaluated; and then strategies should be improved to ensure continued development for establishing the best integrated SMEs support program.

This scheme needs to be implemented effectively and there are many ways to do this. Some programs are not difficult to implement *e.g.* taxation breaks, financial assistance *etc*. Training courses, consulting, diagnosis of problems *etc*. should also be available. However, the government may have inadequate staff to support an entire assistance package, therefore, cooperation with specialists from academic institutions, consulting companies, and the professional management industry should be used.

In general, the integrated SMEs support program is an integrated approach for improving the environment and supporting SMEs. It is also a program to implement permanent support structures through which future programs, initiatives and supports can be channelled. The overall objective of the integrated program is to develop and implement an integrated approach linking policy formulation, training and servicing of start-up and existing SMEs assisted by the Government of Egypt. The program also aims to reinforce access channels to long term financing of SMEs and start-up businesses.

There are many additional recommendations about actions and activities to be performed on the long run during the SMEs support program included:

- Consultations with stakeholders to (a) identify legislative and regulatory impediments; (b) create new initiatives; and (c) encourage support for program activities.
- Working with legislators and other regulatory stakeholders to propose and implement reforms.
- Developing an overarching SMEs strategy for the next 10 years.
- Launching calls for proposals and assisting in the establishment of a network of business development centers.
- Training and building the capacities of the SMEs support units, and business development services (BDS) providers.
- Supporting the development of the Centers and their services.
- Working with private and public financing agencies to expand financing for SMEs.

Strategy 4: Improvement of organization work systems

The Egyptian manufacturing SMEs have to face the threats such as competitive situations, potential competitors, number of competitors, *etc*. They need an effective organizational performance to respond to real competitive situations.

The weaknesses of the organization performance have caused many problems. About 97% of surveyed SMEs still needed to upgrade their organizational performance to increase their competitiveness. Therefore, all ineffective work systems need to be improved by government assistance programs.

Generally, this strategy should be implemented and practiced with the tools and techniques designed to improve organization's work systems and to achieve successful QMS, but the research found that most of SMEs had a very limited and poor adoption of those tools and techniques (suggestion system, statistical process control, job rotation) and most of SMEs which applied these improvement tools and techniques claimed that the effectiveness of their application was in a low range (Figure 2). They urgently need to implement an introductory program to widen the use of improvement tools and techniques and to increase their effectiveness by providing advanced training courses for their use.

Strategy 5: Development of quality management system

After establishing a basic infrastructure, SMEs need to develop a QMS to increase their business performance. The basic infrastructures are then set and correspond to the seven criteria of the EgyQA; leadership, strategic planning, customer focus, human resource focus, process management, information and analysis, and business results.

Strategy 6: Establishment of TQM basic infrastructure

The implementation of TQM requires the establishment of an effective basic infrastructure which is considered in the same way as the criteria of the EgyQA which can be used as guidelines for the implementation of TQM and self-assessment for achieving business excellence performance. In order to establish the work systems in the basic infrastructure, the strengths should be assisted and the weaknesses should be improved.

11. Proposed QMS (HFs) development model for SMEs

The weaknesses in the organizational aspects and basic infrastructures have a clear effect on the implementation and the establishment of a QMS in SMEs. To rectify this, according to this study, enterprises should focus on three development components: (1) Strengthening the organizational aspects and developing basic infrastructures and organizational culture. (2) Developing and implementing full QMS; this includes the implementation of continuous improvement (CI), statistical quality control (SQC), quality assurance (QA) programs and best practices. (3) Increasing the organization's competitiveness by applying full TQM implementation to achieve world class manufacturing performance or business excellence.

From the above, the scope of proposed QMS (HFs) development approach in Egyptian manufacturing SMEs is covered through three stages. These are all affected by opportunities and threats (Figure 3).

12. Developing human resources for establishing an effective QMS in SMEs

From the previous stages of developing QMS in Egyptian manufacturing SMEs, it could be concluded that the need of human resources development (HRD) begins with the stage of strengthening the organizational aspects and developing basic infrastructures *i.e.* strategies, structures, styles and systems (as shown in figure 3). This first stage aims to establish a strong organizational infrastructure and also to introduce a new organizational culture to improve employee performance at each level. Comprehensive management changes are important because they are directly related to human resources (HRs).

To achieve the second and third stages successfully, there is a need to develop HR in all their aspects. This should cover the following:

Managerial education programs for upgrading entrepreneurs to be management professionals (leadership, self-management, decision making, financial analysis, *etc*.) and how to develop and possess employees' attitudes, beliefs, values, and behaviours effectively, and also how to develop employees' skills.

Delegation and empowerment programs for entrepreneurs to learn how to delegate and empower employees which should be a priority if the owner wants to become a manager of his enterprise. It is the way how to do less to achieve more.

Workplace education and training programs for employees for developing employees' workplace basic skills, technical skills and job-specific training within a broader training framework. These skills are the core skills that employees need in order to do their jobs successfully with high performance. They are also an urgent need to the success of modern businesses.

In this paper, a diagram was developed showing a model of human resources development (HRD) for establishing an effective quality management system (QMS) in Egyptian manufacturing SMEs (Figure 4).

13. Conclusions

Adoption of quality management (QM) in Egyptian manufacturing SMEs was shown to be essential for their survival and growth. This paper focused particularly on developing the organizational performance of the SMEs to make them able to implement a quality management system (QMS) successfully and so they could be able to compete effectively with both domestic and overseas competitors and play a major role for improving the Egyptian economy.

The results of the SMEs survey highlighted the lack of human aspects in their approach to QM. It was shown that government assistance, at this point in time, is not effective for establishing strategies for their development.

Most development policies and programs for SMEs which were established and implemented by the Egyptian government (GOE) so far were mostly unproductive and did not clearly distinguish between two objectives; promoting competitiveness and poverty alleviation and income generation.

The government needed to be clearly aware of the needs of Egyptian manufacturing SMEs and provide strategies and vision and mission statements to implement its assistance policies in order to develop an effective quality management system (QMS) which would assist the SMEs to achieve a business excellence or world class manufacturing performance.

Alone, Egyptian manufacturing SMEs cannot develop their organizational performance. They need to develop linkages with business partners in order to gain business information and assistance programs from as many sources as possible.

The SMEs being supported need to be carefully selected in order to ensure that they are interested in improving their businesses and committed to make the changes that are required.

The proposed strategies for developing a quality management system were recommended to be supported by the Egyptian government. These strategies should be established and implemented effectively in a wide range for the SMEs. These strategies were: provision of reliable information and effective communication system; provision of education program; provision of effective SMEs development programs (integrated SME support program); improvement of organization work systems; development of QMS and establishment of TQM basic infrastructure.

Egyptian manufacturing SMEs preferred, generally, to use an improved cost strategy to overcome market resistance and refused to use other strategies (product quality, delivery, and flexibility). This was not a sensible response to the establishing of a world class manufacturing strategies which need focusing on all strategies equally. This strategies should achieve three levels of satisfaction; organization, customers, and society.

Quality awards should be created and promoted as tools for awareness of performance excellence and information sharing of successful performance strategies and the benefits derived from using these strategies. The Egyptian Quality Award (EgyQA) should be promoted to be used by SMEs as guidelines to drive excellence, not to win the award as an ultimate goal. A key to growing both its internal and external markets would be to dramatically improve the quality of how its businesses are run, as well as the overall quality of its goods and services.

The SMEs face a lot of constraints related to its negative structure characteristics. The SMEs' firm size skewed towards smallness and obvious middle firm size is missing, with limited financial resources, and temporarily hired labour. Skewed pattern towards smallness was reflected in the capitalization patterns of the industrial sector in Egypt. They also had an unclear organizational structure chart that was neither accessible nor familiar to all employees, which may limit the long term planning. On the other hand, the SMEs had a long business experience and they are completely owned by families which provide enterprises with flexibility.

Egyptian manufacturing SMEs preferred to depend completely on the traditional individual top down management style rather than any other management style such as bottom up or cross functional. They did not use a combined style. Therefore, provision of training courses for developing the management skills of entrepreneurs, managers, and employees about changing the management style from traditional single individual top down to combined (Bottom up, Top down, Cross functional) is necessary.

Most of SMEs in Egypt had not established any strategic human resource plan, while some enterprises had strategic human resource plans which were not related to the enterprise's policies and goals. The whole key issues should be given great emphasis; as there are no successful achievements in the strategic human resource planning.

Skills of front-line operators (technical, multi-skills, people, and management) in SMEs needed to be improved. However, most SMEs did not provide their employees with training courses. The training courses in QM - if provided- were just for once and were only basic courses, which is insufficient for establishing an effective quality management system. The most used excuses for lack of training in QM were motivation weakness of leader, high cost of training courses, lack of government assistance and less effort from employee.

For human resource development (HRD), it was recommended that; (1) Governmental effective campaign to deploy the value of quality award adoption and make it accepted by SMEs owners, (2) Enhancement of SMEs' access availability to governmental services and creating comprehensive training support system, (3) Frequent provision of training courses for all employees, (4) Progression of training courses from basic to intermediate to advanced, (5) Communicating to the managers the benefits of the initiative, and (6) Encouraging employees involvement, participation and empowerment plans and programs.

Most of SMEs assigned initial authority and responsibility to supervisors for considering and solving quality problems. On the other hand, only top managers could successfully lead the implementation of QM. The work cooperation/teamwork in organizational aspects of SMEs seemed to be very weak, and quality problems were solved by individuals. Therefore, provision of training courses for building a team *e.g.* team management, team leading, cross functional management *etc.* is necessary.

The performance management system in most of SMEs had focused only on assisting decisions on work improvement, while there were a weakness and lack in the rest of performance management aspects. The whole subsystems of performance management should be considered, and the system should be developed through three phases: (a) Setting expectations for employee performance, (b) Maintaining a dialogue between supervisor and employee to keep performance on track, and (c) Measuring actual performance relative to the performance expectations.

Policy deployment and document management systems in SMEs need to be further developed to be more sufficient and effective.

Most of SMEs had established many subsystems of leadership and they were moderately implemented. The whole other leadership activities were very weak and some of them were not even found at all in the Egyptian manufacturing SMEs, and should be considered and developed to extend to a comprehensive effective leadership system.

In general, organizational aspects should be strengthened before establishing a basic infrastructure. Basic infrastructure needs to be developed through three gradual stages from the foundation of organizational aspects; Stage 1, Basic organizational aspects (work satisfaction, gender equity and opportunity, employment relation, trust, morale, quality of working conditions) should be established and lead into Stage 2, further development (work commitment/participation, quality awareness, continuous learning, continuous improvement mindset, autonomous work, leadership, work cooperation/teamwork, scientific decision making methods). And Stage 3, which focuses on long term goals and the linkage between employees and organizational goals. From the previous stages of developing QMS in Egyptian manufacturing SMEs, it could be concluded that there is an urgent need of human resources development (HRD) in all their aspects.

A small number of SMEs participate in quality award programs. Mainly stated reasons for not participating were that it consumes too much time, distracts from other important matters, and there is no benefit from winning an award. Recommendations for government and organizations about actions to be performed for effectively using quality award programs were as follows: (1) Promoting the concept of acquiring quality awards to drive excellence, not to win the award, (2) Involving and encouraging leaders, (3) Using the organizational language, not the award language, (4) Using long term focus, (5) Using the feedback from the evaluation process, and (6) Developing internal expertise.

The SMEs need to implement a simplified version of QMS step-by-step. This would be suitable step to take because it does not consume much time or money and it does not use resources wastefully. Simplified version of QMS is relevant for dealing with poor quality culture of the Egyptian manufacturing SMEs.

The SMEs do not have to wait until their organizations are ready to apply for the Egyptian quality award (EgyQA). They should use the criteria in the early stages of the journey toward excellence as a source of information on managing, building a common language, and facilitating communication about performance excellence within their organizations. The criteria could be used as a guide for the development of processes focused on performance excellence and for self-assessment and action.

14. Recommendations for Future Research

The recommendations for future research would address the issues generated from this study. Based on these findings, future research may start from a relatively higher level of knowledge.

- A replication of this study would be helpful in reexamining the validity of its findings. Also, it could be useful for other researchers to apply the same research in other developing countries.
- Further empirical studies using larger sample sizes, greater geographical diversity would be helpful in validating specific parts of the theoretical models proposed in this study.
- It is suggested that future studies on other manufacturing sectors should be carried out and more structured interviews should be conducted to increase the chances of obtaining a thorough and accurate outcome on QMS implementation in Egypt in order to continuously improve the QMS implementation model towards achieving TQM. Thus, model could better meet the requirements of different Egyptian industries.
- It is suggested that future research should be designed to study details of resource problems other than HFs mainly supplied materials, technology and finance as these problems are obstacles to development of QMS in Egyptian SMEs.
- Future researchers should continue to conduct surveys on how the implementation of the TQM technical aspects can be assimilated into the SMEs.
- The success of a business practice like TQM depends on its ability to satisfy the interests of multiple stakeholders. Therefore, future researchers should consider gathering information from various stakeholders such as customers, employees, competitors and suppliers.
- A set of longitudinal studies would be very valuable in studying the time dimension of TQM implementation.

- Future studies should focus on establishment of equipment management and maintenance systems in Egyptian SMEs which lack funds for investing in modern technology.
- Future studies should focus on designing and tailoring effective training courses for entrepreneurs and developing further courses for QM implementation.
- Research into effectiveness of implementing government policies for developing Egyptian manufacturing SMEs should be a priority, and there is a need to set government strategies for assisting SMEs organizational performance.
- Longitudinal continuous studies over a long period of time will help in identifying new trends and needs in SMEs, and in updating frameworks that will prove beneficial to the SMEs in the long term.
- Further studies should identify, among other things, the best sources of data and the best criteria to utilize in determining a unified definition for the SMEs in various sectors.
- Subsequent research needs to be engaged in the development of more valid and reliable small and medium enterprises definitions.

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Table 1. Characteristics of selected enterprises

Classification	Criteria	Percent of enterprises
Firm size	Small (11-50 employees) Medium (51-150 employees)	85.4 % 14.6 %
Approximate Invested Capital	Between 50-100 Thousand EGP Between 100-500 Thousand EGP Between 500 -1 Million EGP Between 1-3 Million EGP	8.3 % 33.3 % 16.7 % 41.7 %
Establishment year	Before 1970 Between 1970 – 1979 Between 1980 – 1989 Between 1990 – 1999 Between 2000 – 2006	4.3 % 12.5 % 27 % 41.7% 14.5%
Business type	Independent business run by family	100%
Final products	Leather products (Clothing & Shoes) Textiles and Garments Food and Beverage	14.6 % 39.6 % 45.8 %
Mode of Manufacture	Labor-intensive Mechanically-intensive	43.8 % 56.2 %
Major labor source	Permanently hired labour Temporarily hired labour Subcontract labour	25 % 75 % 0%
Total survey enterprises		100%

Table 2. List of strengths in Egyptian manufacturing SMEs and their qualifications

No.	Strengths	Qualification
1	They were interested in best practices as an aspect of quality management implementation, at least partially.	*
2	They were aware of benefits of quality management, especially customer satisfaction.	*
3	There was a high level of interest for upgrading organizational performance to be globally competitive.	*****
4	They had resource problems, but some of these problems relatively did not occur frequently (machine and money)	***
5	They had operational task problems, but some of these problems relatively did not occur frequently. (administration and maintenance)	**
6	They considered the moderate significance level of organizational aspects were work satisfaction, employment relation, and leadership.	**
7	Supervisors were the persons who had the main authority and responsibility for initially solving quality problems.	*
8	Top managers were involved as important persons who could lead successful implementation of quality management.	*****
9	Most of top managers had established some subsystems of performance management systems. The good score of performance management system was achieved in system assisted decisions on work improvement.	**
10	They established document management systems.	***
11	The good score of leadership were achieved in the following subsystems: Trying to support resource and budget for improving work performance. Participating in/and using the results of performance reviews. Setting and communicating enterprise directions and seeks future opportunities	*
12	They had implemented improvement programs.	*
13	Top management involved in improvement programs.	*
14	They were interested in government assistance programs for developing the human aspects of their organization.	**

Note: Qualification is classified by the percentage of Egyptian manufacturing SMEs involved in the issues; * = 51% – 60%, ** = 61% – 70%, *** = 71% – 80%, **** = 81% - 90%, ***** = 91% - 100%.

Table 3. List of weaknesses in Egyptian manufacturing SMEs and their qualification

No.	Weaknesses	Qualification
1	They focused on domestic market.	****
2	They had an unclear organization structure chart.	*****
3	They focused on a single management style, especially top down.	*****
4	Most labour-force was temporarily hired.	***
5	They were not interested in achieving quality awards, and had never entered for a quality award.	****
6	They were not interested in all aspects of implementation of quality management.	****
7	There was no adoption of total quality management (TQM) philosophy by Egyptian manufacturing SMEs.	*****
8	They needed to be supported in their efforts to practice quality management at least from poor implementation to partial implementation.	****
9	TQM knowledge needed to be promoted to Egyptian manufacturing SMEs, as they didn't have people who were knowledgeable about TQM.	*****
10	Some benefits of QM received little promotion particularly in the areas of human resource, supplier & partners, company specifics, and financial & markets.	****
11	Their manufacturing strategies were focused on cost reduction rather than quality, delivery, and flexibility.	****
12	Their whole performance measures were weaker than their excellent competitors, and they suffered aggressive competitive situation. They needed to develop their administrative, operational, employee, and technology performance.	***
13	They seemed unable to achieve the seven criteria of the EgyQA, especially in strategic planning, and information & analysis.	*****
14	There was a low level of readiness of their business performance for achieving competitiveness. They needed to develop their business performance.	*****
15	They had poor management systems for competitiveness. They needed to develop their management systems.	****
16	They had many problems in resources (materials, people, machines, money).	****
17	They had many problems in operational tasks (production, administration, maintenance, quality control).	***
18	They had many extended employee problems (high turnover rate of employee - absenteeism-grievance-employment-personal conflict–training and education)	*****
19	There was a negative impact of employee problems on the productivity of products and work efficiency.	***
20	They considered the weaknesses of organizational aspects were scientific decision making methods, gender equity and opportunity, quality awareness , morale, continuous learning, linkage between employees and organization goals, continuous improvement mindset, quality of work life/job security/well-being, trust, work commitment/work participation, work cooperation/ teamwork, long term goals, autonomous work (self-directing)/ work freedom.	*****
21	They needed to establish and develop strategic human resource planning related to the enterprise's policies and goals.	*****
22	The key issues of strategic human resource planning which needed to be urgently established and considered were employee participation & involvement & empowerment, evaluation of employee performance according to specified standards, training & education, retention, hiring, recognition & reward system needed to be well developed.	*****
23	They needed to improve all skills (technical skills, multi-skills, people skills, and management skills) of front-line operators, especially technical skills.	***
24	There were problems of employee training in quality management at all levels (top management, middle management, supervisor, operator), and low	*****

	frequency of trainings.	
25	The major critical problems of training were caused by motivation weakness of leader, high cost of training courses, lack of government assistance, and less effort from employees and other problems.	***
26	Their training courses of QM have not progressed.	*****
27	There is a need to develop the first-line management (supervisors and operators) skills to be able to initially solve quality problems efficiently.	**
28	They used the individual method for solving quality problems. They need to support the team work method.	****
29	The absence of the middle management role (Production managers and QC/QA managers). There is a need to activate and develop their role as leaders for successful implementation of quality management in Egyptian SMEs, and the role of all the other involved persons. Everyone should be an important person who leads successful implementation of QM.	*****
30	Most performance management subsystems needed to be established: 1) Addressing the employee performance expectations. 2) Planning to improve employee performance which is related to the enterprise policy. 3) Finding training need and employee requirement to develop performance.	*****
31	Some subsystems of performance management needed to be well developed such as: 1) Evaluating performance improvement after training. 2) Incentives for employees were related to performance improvement. 3) Feedback for improving skills after evaluating performance.	****
32	They needed to establish a policy deployment system.	*
33	They needed to establish and develop their document management systems to be effective.	**
34	Some subsystems of the leadership needed to be established such as: 1) Promoting continuous learning. 2) Trying to find management innovation for increasing work efficiency/effectiveness. 3) Building an effective communication. 4) Addressing enterprise's societal responsibilities and providing support to key community group. 5) Involving everyone in establishing policy, strategic plan, goals, and objectives of business. 6) Setting effective data and information management system for supporting decision making. 7) Involving all employees to evaluate organization's leadership.	*****
35	Some subsystems of leadership needed to be well developed such as: 1) Trying to find technology innovation for increasing work efficiency/effectiveness. 2) Creating an environment that supports high performance. 3) Encouraging and supporting employees to participate in improvement programs. 4) Satisfying employee and improving quality of work life and well-being. 5) Communicating and reinforcing values, performance expectations, and focus on all stakeholders. 6) Changing the work behavior from working as individuals to working as team. 7) Leading for changes in organization culture. 8) Encouraging authority decentralization for making decision to improve performance and solve problems.	****
36	The improvement methods emphasized mainly the ideas from top management. There is a need to consider and develop other improvement methods.	*****

37	They needed to develop their basic, advanced, and management CI tools and techniques. As only a few improvement tools had been used limitedly. Two basic tools (suggestion system and SPC) and job rotation as the only management tool, and no use of advanced techniques.	*****
38	They were not familiar with gaining assistance on offer from any government program.	**
39	They were less interested in some particular government assistance programs such as employee empowerment, communication and information, organizational aspects, strategic HR planning, and leadership.	****

Note: Qualification is classified by the percentage of Egyptian manufacturing SMEs involved in the issues; * = 51% – 60%, ** = 61% – 70%, *** = 71% – 80%, **** = 81% - 90%, ***** = 91% - 100%

Table 4. List of Opportunities for Egyptian manufacturing SMEs

No.	Opportunities
1	Opening up of regional and world markets through free trade agreements and preferential access.
2	Establishment of Egyptian Quality Award (EgyQA) for Business Excellence framework.
3	Demand for 'traditional' manufactured export products such as (frozen, pureed, canned fruit and vegetables) in the food-industry sector.
4	Various quality management practices used by SMEs.
5	Focus of government policy on SMEs and provision of government assistance programs.

Table 5. List of Threats for Egyptian manufacturing SMEs

No.	Threats
1	Increase of the competitive situation in both domestic and international markets; increasing number of overseas competitors and potential competitors.
2	Higher customer expectation of quality of products.
3	Delay in the implementation of systems to meet international quality specifications and requirements.
4	Erosion of Egyptian industry position on domestic and export markets.
5	Requirement of quality assurance and quality management; Egyptian manufacturing SMEs need to maintain their quality of processes and increase their organization performance.
6	Need to achieve quality awards and need to develop their basic infrastructure to achieve the criteria required in Business Excellence (EgyQA) practices.
7	Egyptian manufacturing SMEs could not take advantage of the changes in technology because they lacked the capital for investing in modern technology. Moreover new technologies do not always help reaching the target but can make failure impact more costly and severe. Therefore, they need to focus on human capabilities and human resource development.
8	Poor culture and the ignorance of human being as the most important and valuable asset in any organization.

Table 6. Effects of strengths, weaknesses, opportunities, and threats on organizational performance

The Effects of SWOT Analysis	
Positive effects	Negative effects
Strengths (+)	Weaknesses (-)
- Business experience. - Interest in QM implementation programs. - Awareness of QM benefits (Customer satisfaction). - Interest for upgrading organizational performance to be globally competitive. - Interest in government assistance program.	- Firm size. - Invested capital. - Major labour source. - Market focus. - Organizational structure. - Management styles. - Quality award entries. - Implementation and progression of QM. - Number of employees who were knowledgeable about TQM & TQEM. - Promotion of QM benefits (Human re-source, suppliers & partners, company specifics, and financial & markets). - Readiness of the organization for development of business performance for achieving competitiveness. - Manufacturing strategies. - Current competitive situation. - Achievement of EgyQA criteria. - Problems (resources, operational tasks, employee problems). - Organizational aspects. - Strategic human resource planning. - Skills of front-line operators. - Training in Quality Management. - Solving Quality problems. - Performance management. - Policy deployment. - Document management systems. - Leadership. - Improvement programs. - Government assistance programs.
Opportunities (+)	Threats (-)
- International markets. - Demand for 'traditional' manufactured export products. - Egyptian Quality Award (EgyQA). - Various and flexible QM practices used by SMEs. - Government assistance.	- Aggressive competition. - FTA, Non-tariff trade. - Higher customer expectation. - Erosion of Egyptian industry position. - Delay in implementation of international quality specifications in the whole Egyptian systems. - Limited access to financial services needed for development and lack of capital for investing in modern technology. - Poor culture and ignorance of human being as the most important and valuable asset in any organization.

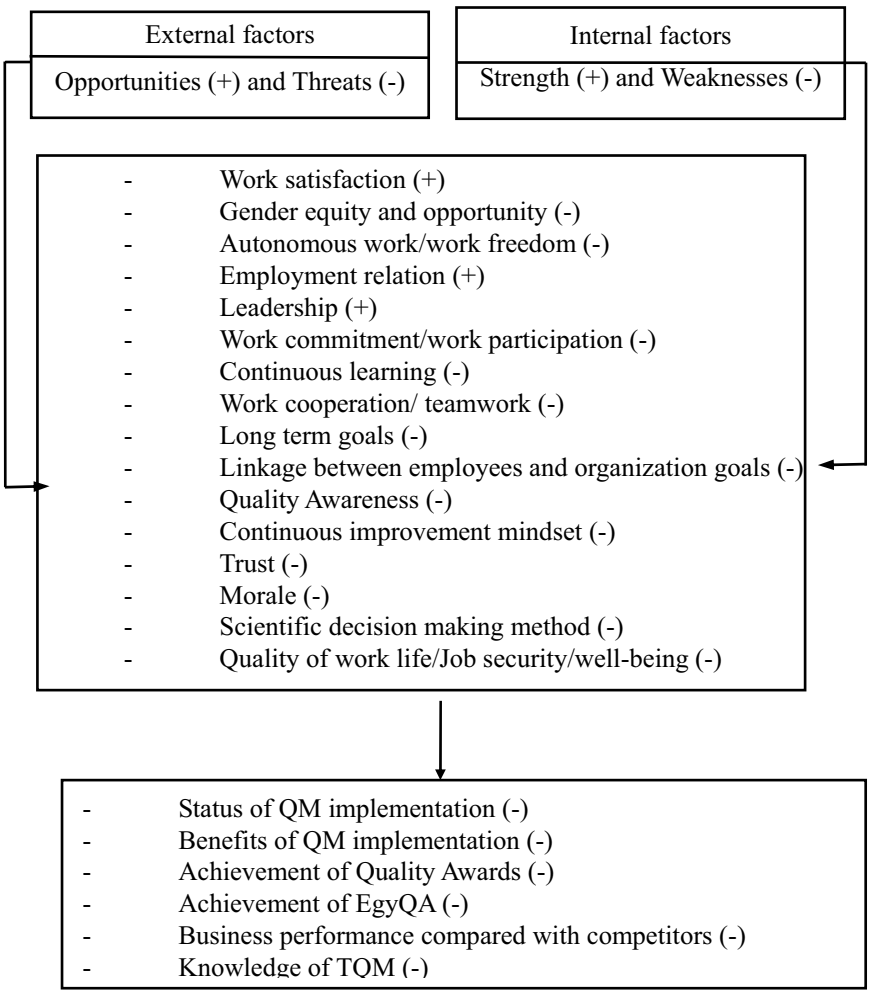


Figure 1. Effects of strengths, weaknesses, opportunities, and threats on the organizational performance in Egyptian manufacturing SMEs

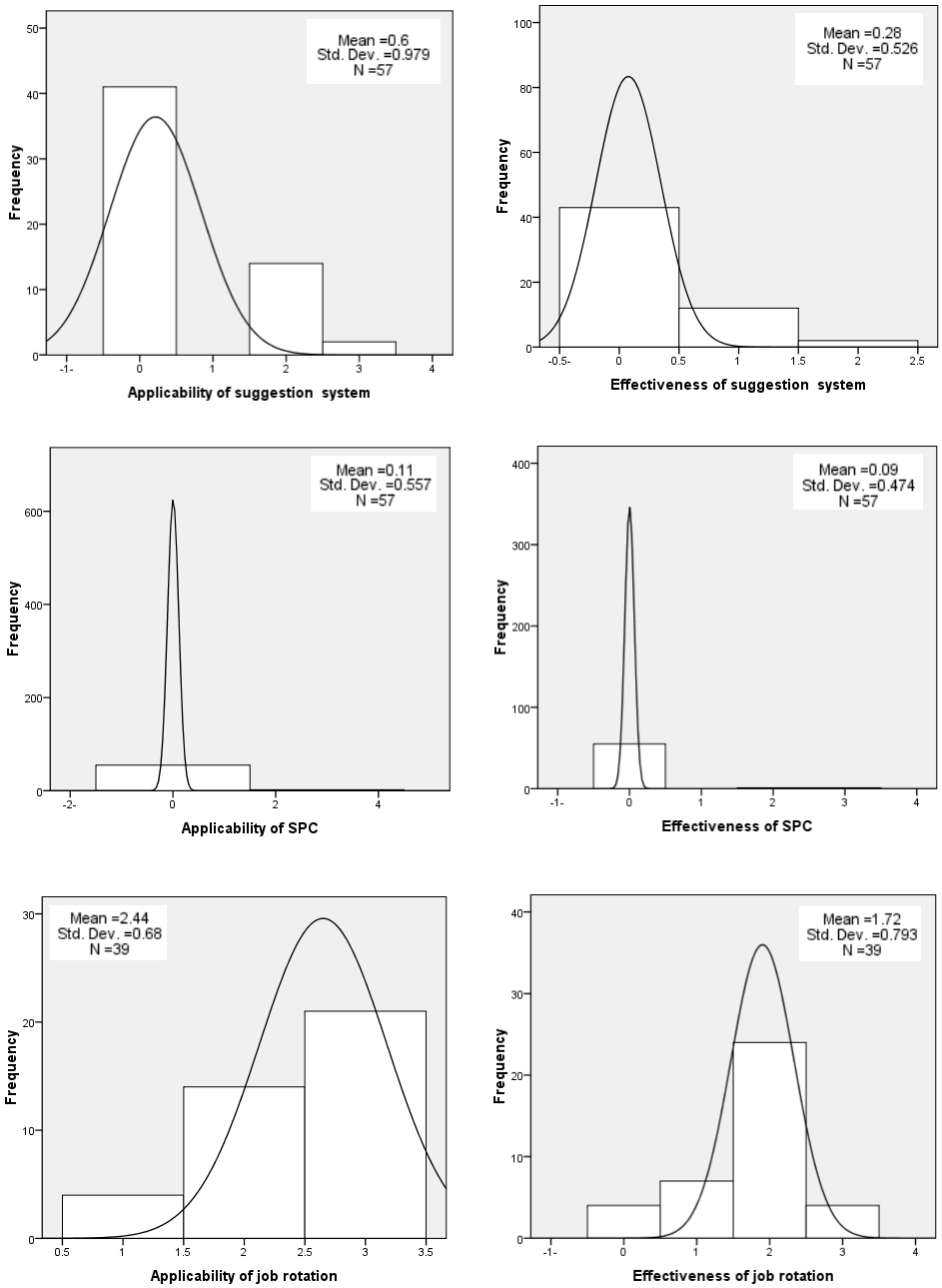
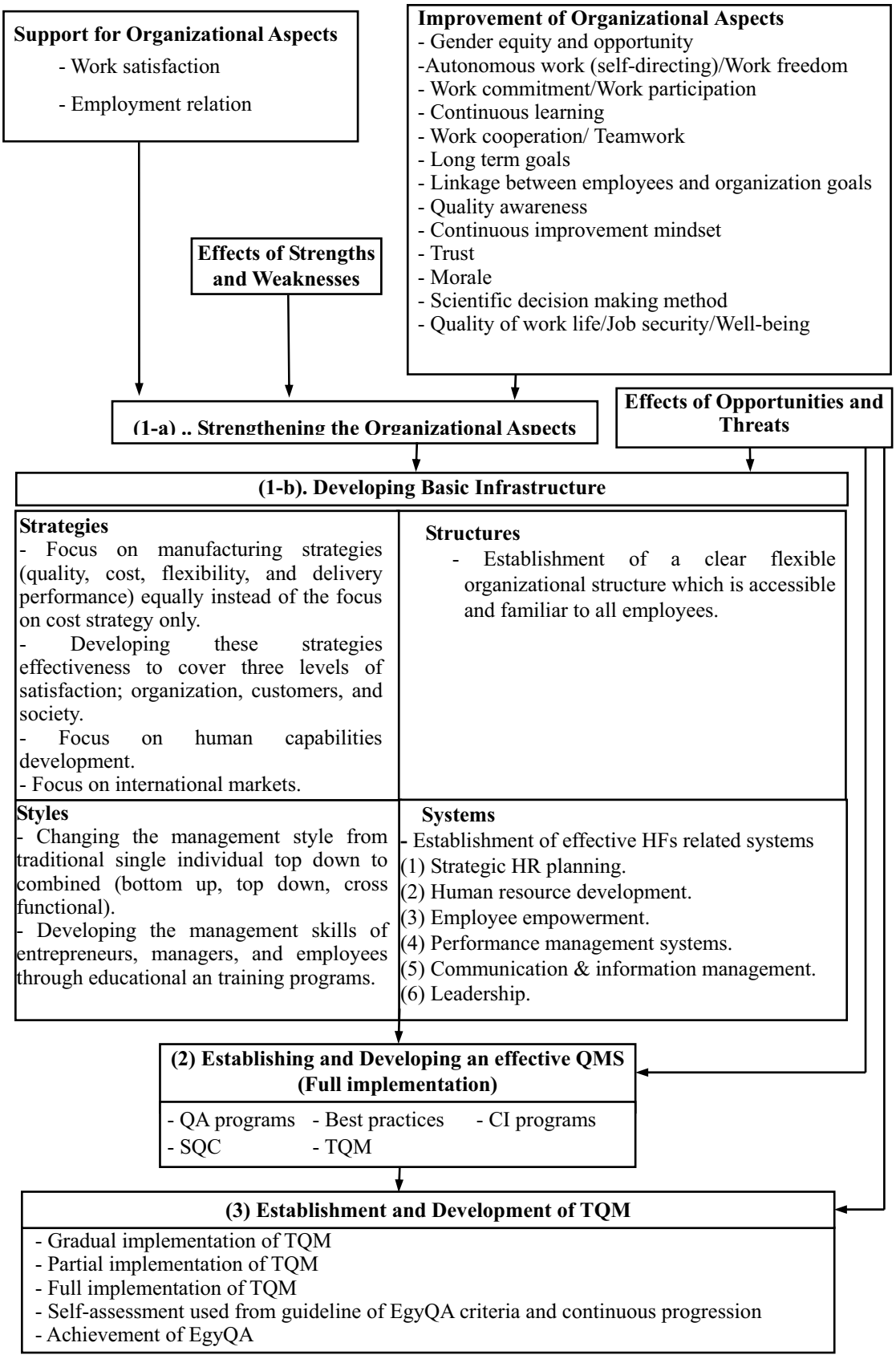


Figure 2. Applicability and effectiveness of quality improvement tools and techniques



Note: To emphasize central importance of human factors in QMS, the term QMS (HFs) is used.

Figure 3. Scope of proposed QMS (HFs) development in manufacturing SMEs

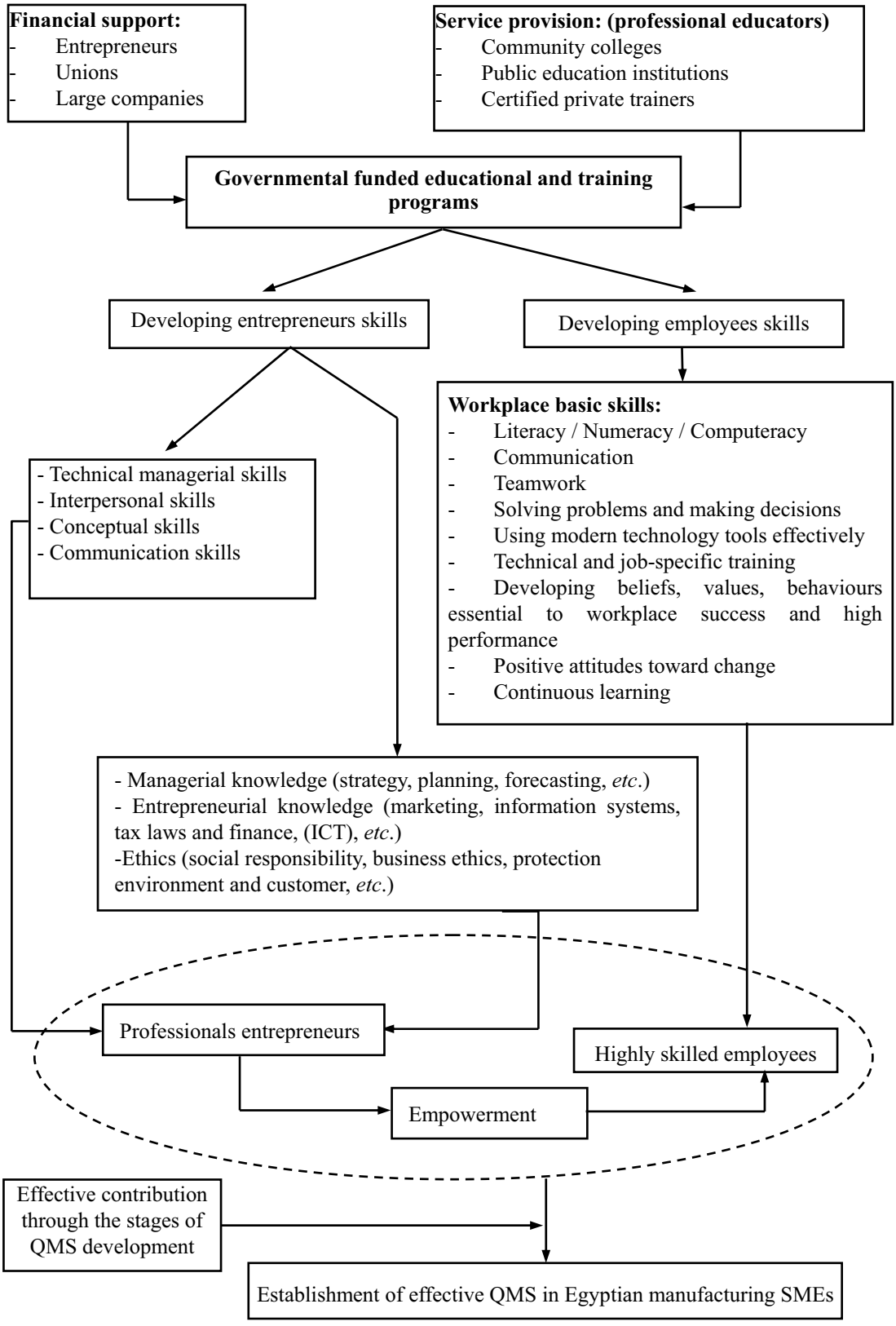


Figure 4. Model of human resources development (HRD) for establishing an effective quality management system (QMS)