

Examining the relationship between activities (components) of quality management and their impact on quality outputs (case study of industrial estate Company of Kermanshah province)

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Abstract: This study aimed at determining the relationship between activities (components) of comprehensive quality management and investigating direct and indirect effects of these activities (components) on quality outputs in small and medium industries. The objectives of this study are: 1. creating more understanding and insight about the mentioned variables; 2. determining the priority of the measured variables; 3. determining variables that have the greatest impact on quality outputs in this study; 4. utilizing the results in order to increase quality outputs in small and medium industries; 5. Raising the competitive ability given the importance to the variables, that have greater impact on quality outputs. Thus, some questionnaires were distributed among statistical population of the study which were 186 active small and medium companies located in industrial estates covered by industrial estates company of Kermanshah province in 2010. The studied model assumptions were tested that were the relationship between independent variables of total quality management such as leadership, quality tools and techniques, quality planning, human resource management, customer focus, process management, supplier management, continuous improvement and learning and their influence directly and indirectly on quality outputs using statistical method of structural equations. Findings support the relationship between quality management measures and their positive effect on quality outputs.

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Introduction:

Total quality management is one of the most successful management philosophies that has met quality issues, and needs and expectations of the customer, organization and society. This management philosophy is interrelated multiple methods and techniques with a new integrated approach reasonably, such that its main axis is customers of the organization (both internal and external).

This study sought to investigate the relationship between activities (components) of quality management and their impact on quality outputs in small and medium manufacturing industries covered central office of industrial estates Company of Kermanshah province. Thus, the impact of quality tools and techniques are analyzed and evaluated in terms of tool type or quality technique used in the company and its impact on quality outputs and also the impact that variables of quality planning, human resource management, customer-focused, supplier management and leadership on variables of continuous improvement, learning and process management that ultimately leads to the effect on quality outputs through information obtained from

the questionnaire. Therefore, the aim of this study is to identify the relationship between activities (components) of quality management and describe their direct and indirect effects on quality outputs. In this chapter an overview of the study including: statement of the problem, review of literature, research objectives and importance, theoretical framework, hypotheses, research scope, model and keywords has been presented.

Literature review

Teriziovski et al found in a study that quality culture affects business performance and also found that personal factor has a greater share on customer orientation (Teriziovski et al, 2003, 580-595). Zahra Danial showed that training needs of nurses in the experimental group was significantly high. Also there is a significant difference between training needs and components of total quality management in providing nursing services (Danial, 1388, 117-120). Anderson et al found in a study that employee's work has a considerable direct impact on customer satisfaction; and also there is no relationship between continuous improvement and customer satisfaction (Anderson et

al, 1995, 637-658). Mohammad Reza Sarmadi et al found in a study that in organizations based on total quality management, considering the customer is not regarded an instrumental attention; and manager and employees while paying particular attention to organizational goals are also committed to the ethical duties in the organization that clarity and honesty, privacy, confidentiality, trust and adherence to contracts and covenant promises can be mentioned as an example (Sarmadi et al, 2009, 99-110). Kaynak showed in as study that total quality management has a positive effect on the company's performance (Kaynak, 2003, 405-435). Merino-Diaz found in a research that there is a relationship between total quality management and performance. However, variables of human resource have a greater share on performance (Merino-Diaz, 2003, 2763-2786).

Hossein Sayadi Turanlu et al concluded during a study that in total, there is a significant difference between expectations and perceptions of the status quo and the optimal state of total quality management in Khorshid hospital of Isfahan. Also expect components of customer orientation, there is a significant gap in other components of total quality management (Sayadi Turanlu et al, 2008, 57-67).

Teskouras et al found in a study that ISO9000 acceptance has no impact on the company's performance (Teskouras et al, 2002, 827-841). Lee et al showed in a study that better quality results can be achieved through navigation channels and quality information and their analysis (Lee et al, 2003, 2003-2020). Hossein Jalili Ranjbari demonstrated in a study that the establishment of quality management system of ISO9001:2000 has increase the satisfaction of employees and customers and reduced the amount of losses in the industry; in other words, the amount of customer satisfaction has increased from relatively low to high and employee satisfaction from relatively low to relatively high; the amount of wastes has also reduced on average 3.07 to 1.64 (Jalili Ranjbari, 125-128). Curkovic et al found that total quality management affects performance; quality management may also affect the performance of company (Curkovic et al, 2000, 855-905).

Agus and Sagir concluded during their study that total quality management has an indirect impact on financial performance through competitive advantage (Agus and Sagir, 2001, 1018-1024). Yadollah Hamidi et al found in a study that the results showed positive changes in organizational culture, teamwork, process-oriented and customer satisfaction in the studied population (Hamidi et al, 2009, 37-43). Changiz Valmohammadi concluded during a research that:

1. After the establishment of ISO9001:2000 standard and receiving the corresponding

certification, production and services companies move towards implementing continuous improvement activities in all organizational dimensions to achieve the implementation and deployment of effective and synergistic TQM by accurately performing the requirements and following ISO9004 standard guidance

Uncertainties about concepts, standards and tools of TQM implementation and deployment are removed through this; and a clear framework is determined in order to implement this modern style of management in the country.

2. The importance and priority of TQM criteria and elements must be considered in the TQM implementation and deployment that according to this approach, the most important one is focusing on the customer.

3. by comparative investigation between ISO9000:2000 standards and various approaches of TQM, main criteria and sub-elements and also the priority of each of these criteria and elements have been identified from exports viewpoint. Therefore, organizations and companies performing TQM can use this self-assessment tool in order to measure and evaluate their activities in the early years of its implementation: after evaluation, the areas in which there is shortage are determined and taken appropriate action in order to eliminate them. Thus, it not only will help the organizations but also will increase the quality of their products and services, reduce costs, and provide operating costs, more effective use of accessibility and raw materials, equipment and human resource (Changiz mohammadi et al, 2004, 181-211).

Importance and necessity of the research

Basically, in today's organizations many investments are done to achieve an acceptable level of industrial development and provide optimal services and requested by the customer; in this way obtaining an appropriate share of facilities and human resources of the country from global trade volume, not only is considered the necessity of industrial development but should be done in line with it.

TQM as an important and effective tool with the provided mechanisms has provided an appropriate structure for utilizing experiences, talents, intellectual and rational ability and key resources of the organization and automatically helps the organization management to use the existing ability and potential capabilities of the employees in the future of the organization. TQM can also be used for productivity and coping with rapid changes of the environment and competing in national and international level. The future of global mark is in the hands of those companies which could understand and apply TQM,

because pulse and heart of business and servicing and producing is in the hand of customer; and a company is successful that recognizes the customer and estimates his needs and satisfies the customer with the help of financial-physical facilities and its human resources; and therefore the present study has been conducted relying on the studies and has considered an overall framework of QTM factors affecting quality outputs of manufacturing companies.

Research objectives

1. Creating more understanding and insight about the variables
2. Determining the priority of the measured variables
3. Determining variables that have the greatest impact on quality outputs of this study
4. Utilizing the results in order to increase quality outputs in small and medium industries
5. Enhancing competitiveness given the importance of variables that have a greater impact on quality outputs

Research hypotheses

1. Leadership has a positive impact on quality planning
2. Leadership has a positive impact on human resource management
3. Leadership has a positive impact on quality tools and techniques
4. Leadership has a positive impact on learning
5. Leadership has a positive impact on customer focus
6. Leadership has a positive impact on supplier management
7. Human resource management has a positive impact on quality tools and techniques
8. Human resource management has a positive impact on learning
9. Human resource management has a positive impact on process management
10. Human resource management has a positive impact on quality improvement
11. Learning has a positive impact on process management
12. Learning has a positive impact on quality improvement
13. Quality planning has a positive impact on process management
14. Quality planning has a positive impact on continuous improvement
15. Customer focus has a positive impact on process management
16. Supplier management has a positive impact on process management

17. Process management has a positive impact on continuous improvement
18. Quality tools and techniques has a positive impact on continuous improvement
19. Process management has a positive impact on quality outputs
20. Continuous improvement has a positive impact on quality outputs
21. Quality tools and techniques has a positive impact on quality outputs
22. Human resource management has a positive impact on quality outputs
23. Learning has a positive impact on quality outputs

Statistical population and sampling method

Statistical population of this study is all small and medium active companies located in industrial estate covered by industrial estate Company of Kermanshah province that based on performed investigations about 186 companies were identified as active companies. Since the statistical population is limited to 186 active companies and the questionnaires were distributed between two groups of managers' i.e. senior managers and quality managers of the organization, totally 308 applicable questionnaires were obtained for conceptual model of the research.

In this study using the presented model, once the effect of independent variables (quality tools and techniques, leadership, quality planning, human resource management, customer focus, supplier management) were measured first on the mediator variables (continuous improvement, learning, process management) and then the effect of all independent and mediator variables on the dependent variable (figure 1).

Data collection methods and tools

In this study, questionnaire technology research has been recommended and used as the most appropriate method to collect the required information to examine the relationship between research variables. The questionnaire is composed of four parts:

Part 1: including questions about demographic characteristics of the respondents

Part 2: quality management activities include 8 components with 37 questions

Part 3: quality outputs include 4 components with 15 questions

Part 4: quality tools includes 10 questions

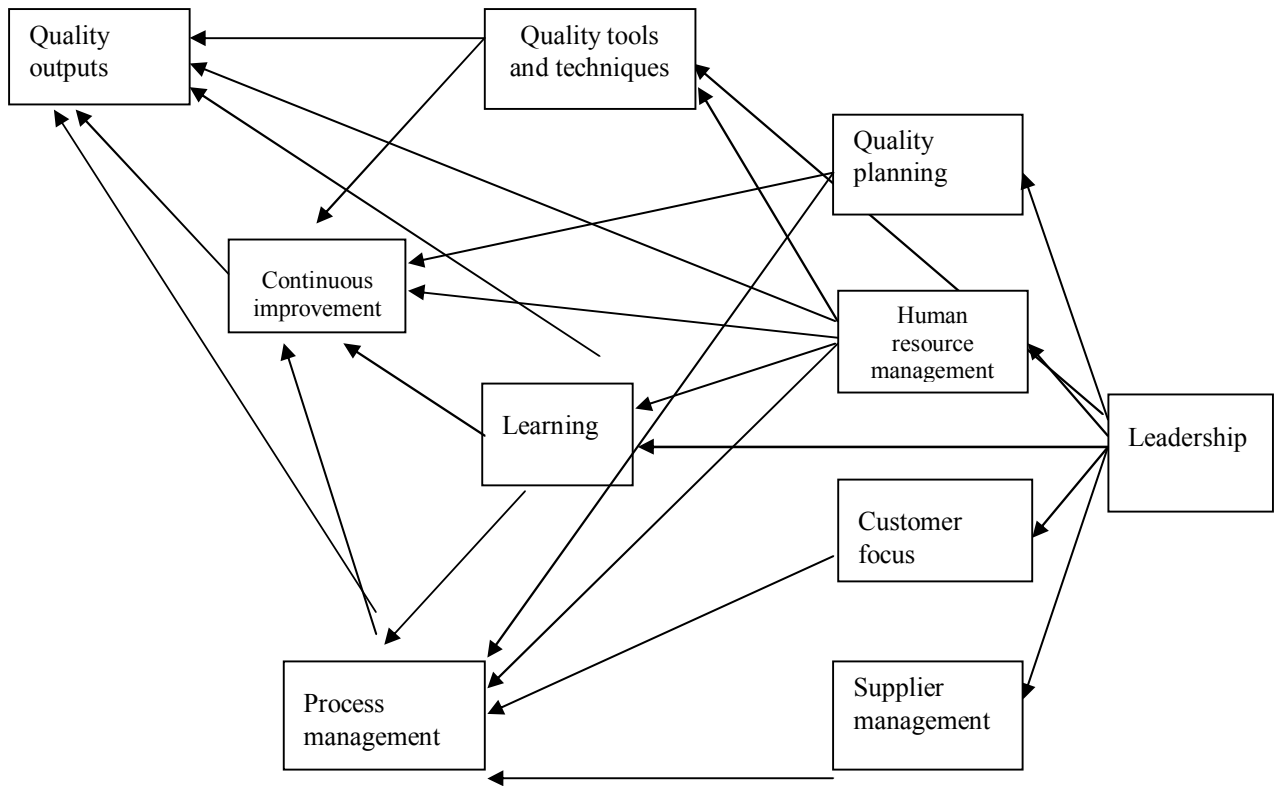


Figure 1. Conceptual model of the relationship between independent and dependent variables (Guan Jose Tari et al, 2007, 458)

Measurement scale

In this study, Likert spectrum has been used to measure the attitude of respondents to questions,

and after collecting the questionnaires the spectrum was graded or scored with numbers as follows:

Fairly disagree	disagree	Strongly disagree	No idea	Fairly agree	agree	Strongly agree	Answers
7	6	5	4	3	2	1	Scores

After allocating scores to the questionnaire terms, the total score respondent represents his attitude or reaction to the proposed issue. Therefore, it has been also named total score spectrum.

Statistical methods of data analysis

In this study, structural equations modeling have been used to investigate the relationship between components of the model. Meanwhile, the researcher has used structural equations modeling for confirmatory factor analysis. Lisrel software has been used to analyze the hypotheses; the structural model describes the causal relationship between variables.

In this process, first a causal hierarchy is proposed in which some variables may be a possible cause of other variables, but certainly can not be its effect. In other words, the order of variables is such that the variable which is at the top of this hierarchy may be the cause of the variable in its lower-order,

but it is unlikely that the lower variable is the cause of variable above it.

The complete model of structural equation is in fact a mixture of path diagram and confirmatory factor analysis. The path diagrams play a fundamental role in structural modeling. These diagrams like computer flowcharts show the variables that connected together with lines representing causal flow. The path diagram can be considered as a means to show that which variables cause changes in other variables. All independent variables have arrows toward the dependent variable. Weighting coefficient is placed above the arrow. Note that besides showing the linear equation relationship with arrows, the path diagram has several other aspects as well in the structural equation. First, we must know the variance of independent variables to be able to test the structural equation model. Variances are shown in the

diagram by using the curved lines without arrowhead is specified. Such lines are considered as wires. Second, some variables are shown to the form of a circle (or oval) and some others to the form of a square (or rectangle). Circle or oval represents latent variables and rectangle or square represents the measured variables. A typical Lisrel model is composed of two parts:

The measurement model

The measurement model or section of confirmatory factor analysis indicated that how latent variables or hypothetical constructs have been measured in terms of more number of observable variables. In studies aimed at testing a particular model of the relationship between variables, model analysis of structural equations or causal models are used. In this model, data is as covariance or correlation matrix and a set of regression equations is formulated between variables. Then covariances of the measured variables are analyzed.

The structural model

The structural function part or path analysis defines the causal relationships between latent variables. In other words, the measurement model with $(\lambda \gamma \lambda x \theta \delta \theta \epsilon)$ parameters answers questions

related to validity and reliability of the observed variables; and structural function model with $(\gamma \phi \psi \beta)$ parameters answers questions related to the strength or intensity of causal relationships (direct, indirect and total) between latent variables and the value of explained variance in the total model.

Therefore, a Lisrel model provides the possibility for the researcher to evaluate measurement errors in a model and estimate structural parameters at once. On the other side, Lisrel enjoys more capabilities than other statistical tests such as regression and ANOVA techniques which only defines the relationships between the selected variables and is also superior to path analysis; because path analysis is a process consisting of successive separate stages based on multiple regressions while Lisrel analysis is continuous and powerful. Unlike Lisrel, since path analysis can't specify the overall measurement errors between latent observable variables, it assumes that the observed measurements are equal with values of latent variables (while such an assumption is incorrect in practice).

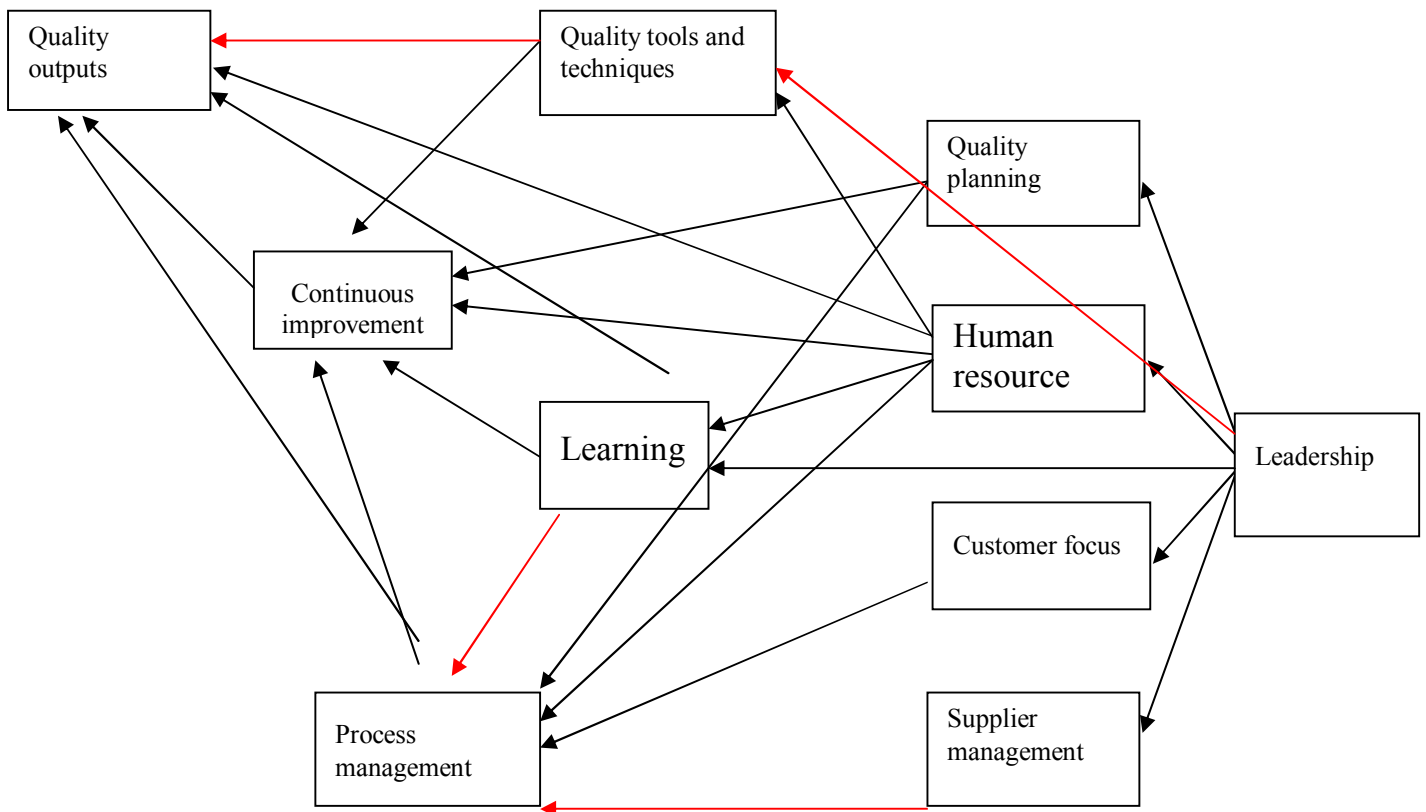


Figure 2. The obtained model using the research results

A summary of results

The proposed study here is a reflection of experimental results which demonstrates that there is a relationship between measures and their effects on qualitative results. Based on the previous studies in this field, the present article provides new results which indicate the importance of this relationship in the current statistical population and is different from the previous statistical population. The role of this study is to determine direct and indirect relationship between total quality management and qualitative results and their generalization.

In the proposed model, 23 relationships has been listed that 19 of them are confirmed directly or indirectly and 4 cases are rejected (the relationship between suppliers management and process management, the relationship between learning and process management, the relationship between leadership and quality tools and techniques, the relationship between quality tools and techniques and quality outputs). In this regard, it can be stated that leaders play a vital role as triggers. They can make goals, investing for employing personal, creating a learning situation, and developing a cooperative relationship with customers possible. These measures affect process management; process management affects continuous improvement and continuous improvement affects qualitative results.

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