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A TQM and JIT Integrated Continuous Improvement Model for Organizational Success: An Innovative Framework

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Abstract
Manufacturing companies must find competitive methods to produce products cheaper, faster, and better to continuously satisfy their customers and acquire organizational success. For continuous improvement to be more successful, hybrid programs, such as integrated TQM and JIT approaches, give better results. As the existing TQM and JIT integrated approaches in literature are not analogous, this study provides a consolidated result. Moreover, the study identifies two additional practices that the TQM and JIT integrated frameworks must contain to continually improve organizational successes. The two practices are the necessity of interaction between the core company and the external stakeholders (such as governmental organizations, universities, banks, research institutions, and others) and the need of technological capability accumulation process, which were either neglected or only limitedly discussed in the existing literature of TQM and JIT philosophies. Thus, this study reviews the existing practices of TQM and JIT programs, explores their relationships, provides modifications to the integrated TQM and JIT framework by developing an improved integrated TQM and JIT approach that can enhance the continuous improvement efforts and global successes of companies. The study also provides a case application for Ethiopian leather and leather manufacturing companies to practically apply the model proposed in this research and to solve the related problems of the companies.
Key words: Organizational success, Continuous improvement, TQM, JIT, Innovative framework.

1. Introduction

Organizations must progressively stare at their competitiveness on the national and international markets in order to sustain their development. The late 20th century business environment creates many challenges to organizations which is unlikely to diminish (Bessant et al, 2001). Competitiveness can be secured only when companies provide quality products and services with cheaper prices and faster delivery time (Nicolas, 1998; Roth and Miller, 1992). Latecomer countries should catch up by focusing on a continuous stream of small improvements to existing products and production processes (Figueiredo, 2008; Kootanaee et al, 2013). Continuous improvement helps companies to improve their performance through continual learning and problem solving. This process involves interactions among suppliers, clients, universities, productivity centers, standard setting bodies, banks, and other critical social and economic actors (Nelson, 1993). Chang (2008) similarly outlined that the continual improvement effort of companies requires the involvement of both the core enterprise and all other members of the supply chain.

The implementation of continuous improvement approach involves the use of a number of tools and techniques to identify problems, wastes, and process variations (Bhuiyan and Baghel, 2005) and to improve the manufacturing processes in order to achieve organizational excellence (Yu and Ding, 2009). Though there are different continuous improvement methodologies (Nicolas, 1998; Kannana and Tanb, 2004; Bhuiyan and Baghel, 2005; Munizu, 2013), continuous improvement programs are popularly associated with TQM and JIT practices (Kossoff, 1993; Kumar, 2010).

Many manufacturing companies have implemented the practices of JIT and TQM in different ways (Anh and Matsui, 2007). However, integrating the TQM and JIT practices is crucial to gaining competitive advantages (Dean and Snell, 1996; Kannana and Tanb, 2004). More significantly, the integrated application of TQM and JIT can put effect on effective continuous improvement program comparing to their individual applications (Flynn et al, 1995; Bhuiyan and Baghel, 2005). The integrated approach of the two programs forms a comprehensive and reliable set of manufacturing practices which are supportive, and their synergy contributes optimistically to organizational success (Sriparavastu and Gupta, 1997; Nakamura et al., 1997; Nicolas, 1998; Cua et al, 2001). However, the existing literatures provide diverse lists of JIT practices as well as TQM practices. These practices are highly biased towards company-wide integration for organizational excellence. Moreover, the JIT and TQM

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practices are very slightly concerned about the development of technological capability and its accumulation process, which is a very crucial procedure for the continual development of the developing countries.

This study intensively reviews the most commonly cited practices of TQM and JIT approaches and provides gaps in the literature. Furthermore, the research develops a new TQM and JIT integrated model which is more helpful to firms of latecomer countries than the existing ones, especially in terms of assisting these firms to develop collaborations with their stakeholders, transfer knowledge and technologies to ultimately develop their capabilities of global competitiveness. The research also applies the new model within the Ethiopian Leather Industry to justify its workability as well as to examine the Ethiopian leather industry's current performance and to show how the new model can enhance their capability and competitiveness. The proposed model provides a ground-breaking framework for the technology-seeking organizations (like that of the Ethiopian leather sector), and for this matter, the new model is named as an innovative framework. The remaining part of research is structured as follows: section two discusses the theoretical background of JIT and TQM and gives the most widely cited practices of and JIT and TQM if they are applied individually. The third section identifies the most commonly cited JIT and TQM integrated practices. Section four identifies the existing gaps in the literature and suggests two additional practices to fill the gaps in the literature. Section five develops a new TQM and JIT integrated model, and section six practically applies the new model to evaluate the performance level of firms in the Ethiopian leather industry. Finally, section seven concludes the works of this research.

2. Theoretical Background

2.1. JIT and its Practices

Just in Time (JIT) production is a manufacturing philosophy which is designed to eliminate all kinds of wastes associated with time, labor, and storage space and process variation in the entire system of production (Muthoni, 2015). JIT can lead to noticeable improvements in the competitiveness of organizations and can create the capability to respond to rapid fluctuations in market demand. The waste can occur through excess inventories and overly large lot sizes, both of which can cause unnecessarily long customer lead times (Nakamura et al, 1998). Other types of wastes are inspection of incoming materials, illogical paper trails, excessive handling of work on shop floor, and excess idle capacity. In general, as discussed by Toyota production system, the seven types of deadly wastes in manufacturing are overproduction, waiting, transportation, inefficient processing, inventory, unnecessary motion, and product defects. Simplifying manufacturing processes (identification and elimination of unnecessary process steps) is an essential step in eliminating such wastes. JIT manufacturing requires scheduling of system-wide production plans based on customer-demand information that is fed into the last part of the production line. Such a demand-driven scheduling is made possible by pull system support practices, use of a kanban card system, and schedule flexibility (Nakamura et al, 1998).

Basics of the concept of JIT are: the company produces only what is needed, when it is needed, and in the quantity that is needed (Muthoni, 2015). JIT manufacturing consists of several components or elements which must be integrated together to function in harmony using a streamline processes (Kootanaee et al, 2013). Thus, in this research, the most recent and earlier research works have been reviewed to identify the most frequently cited elements of the JIT program as shown in table 1.

Table 1 shows that there is no similarity among the JIT practices addressed by these studies. The current study tries to avoid this gap by providing consolidated results (see table 3).

2.2. TQM and its Practices

Over the past two decades, TQM has been well recognized by business managers and quality practitioners. The international standard defines quality system as the organizational structure, procedures, processes and resources needed to implement quality management. Quality needs to be designed into all elements and functions of the organization, and then systematically controlled. A successful TQM requires a committed and well-trained workforce that participates fully in quality improvement activities. TQM is an approach to improve effectiveness, flexibility, and competitiveness of a business to meet customers' requirements (Oakland, 1993) as a source of enhancing organizational performance through continuous improvement in organization's activities (Claver-Cortes et al., 2008; Teh et al., 2009). TQM is the application of quality principles to all facets of an organization. Total quality is described as "an effective system for integrating quality improvement efforts of the various groups of the organization so as to provide products and service at levels which allow for customer satisfaction (Feigenbaum, 1986).

The old concept of quality is reactive which is designed to correct quality problems after they occur, whereas the new concept of quality (i.e., TQM) is proactive which is designed to build quality into the product and process design. TQM requires a culture whereby every member of the organization believes that not one day should go by without the organization in some way improving the quality of its goods and services. TQM was based on Deming's 14 points and embraced a philosophy that involves 4 major areas: 1. Managerial responsibility for continuous improvement; 2. Focusing on the work

processes to achieve improvements; 3. Using statistics to measure process performance; 4. Employee involvement and empowerment. After reviewing articles on TQM practices such as (Anh and Matsui, 2007; Agus, 2005; Li et al. 2003; Hasan & Kerr, 2003; Cua et al., 2001; Matsui, 2002; Flynn et al. ,1995), the most regularly cited practices of TQM can be constructed as given in table 2.

Table 1
Most widely cited practices of JIT

Author(s)	Most widely cited practices of JIT									
	Setup time reduction	JIT schedule	JIT layout/Equipment layout	JIT delivery by suppliers	Pull system/kanban	Top management commitment/support	Workforce management/ Employee involvement	Information feed back	Cleanliness and organization or plant environment	Strategic Planning
Shrivastava & Sridhar (2015)	√		√	√	√	√	√			
Muthoni (2015)	√	√	√	√						√
Cua *et al.* (2001)	√	√	√	√	√	√	√			√
Flynn *et al.*(1995)	√	√		√	√	√	√	√	√	
Nakamura *et al.*(1998)	√	√	√	√	√					
Mullarkey *et al.*(1995)		√	√		√					

Table 2
Most widely cited practices of TQM

Author(s)	Most widely cited practices of TQM								
	Cleanliness and organization or plant environment	Customer involvement/Focus	Process management or statistical process control	Feedback and Communication	Supplier quality involvement/supplier relationship	Cross-functional product design	Committed leadership/ management support	Strategic planning	Workforce management/ Employee involvement
Anh and Matsui (2007)	√	√	√	√	√				
Agus (2005)		√		√	√		√	√	√
Li *et al.*(2003)		√			√	√	√		√
Hasan& Kerr (2003)		√			√	√	√		√
Cua *et al.*(2001)		√	√	√	√	√	√	√	√
Matsui (2002)	√	√	√	√	√			√	
Flynn *et al.* (1995)	√	√	√	√	√	√	√		√

From Table 2, it can be evidenced that the authors commonly mentioned only customer involvement/focus and supplier quality involvement in their TQM practices. In the other areas, there are huge discrepancies. Due to this fact, this research tries to combine these most frequently cited TQM practices and integrate them with the most commonly cited JIT practices which are identified above in table 1, so that the combined effect can result into effective organizational performance.

3. JIT and TQM Integrated Practices

Mullarkey et al. (1995) stated that one consequence of the core JIT practice of lowering WIP is a greater vulnerability of the production process to quality problems. In order to overcome this vulnerability, JIT has become strongly interlinked with kaizen (Imai, 1998) and total quality management (Feigenbaum, 1986). Flynn et al. (1995) also asserted that the use of TQM practices, for instance, is crucial to reduce manufacturing process

variance, and this in turn improves JIT performance. These and many more significant studies on integrated TQM and JIT relationships (as indicated in Flynn et al., 1995; Sriparavastu and Gupta, 1997; Nakamura et al., 1997; Nicolas, 1998; Cua et al., 2001; Anh and Matsui, 2007) discovered the usefulness and the comprehensiveness of combining the effects of the two programs. Considering the work of Gunn (1987), Flynn et al. (1995) noted the difficulty faced by many authors to exactly list out the practices that comprise JIT and TQM.

Table 3
Unique and Common Practices of TQM and JIT

Category	TQM/JIT practices	Remark
Practices Limited to JIT	Setup time reduction	Existing integrated JIT and TQM practices
	JIT schedule	
	JIT layout/Equipment layout	
	Pull system	
Common Practices of TQM & JIT	Strategic Planning	
	Top management commitment	
	Cleanliness/ organization or plant environment	
	Workforce management/Employee involvement	
	Supplier quality involvement/supplier relationship	
	Information feedback and communication	
Practices Limited to TQM	Cross-functional product design	
	Customer involvement/Focus	
	Process Management/ control	

Thus, as the existing TQM and JIT practices in literatures are not analogous, this study provides a consolidated result by identifying the most widely found practices of TQM and JIT in literatures. Meanwhile, these most widely cited practices of TQM and JIT can be divided into unique practices to TQM, unique practices to JIT, and common practices to both of the programs (as used in Flynn et al, 1995 and Anh and Matsui, 2007). From table 1 and table 2, it is now possible to identify the TQM and JIT practices into these three categories, as shown in table 3 above. None of the earlier works on integrating TQM and JIT practices (e.g., Flynn et al, 1995; Sriparavastu and Gupta, 1997; Ahn and Matsui, 2007; Cua et al, 2001; Vappalapati et al, 1995; Rack, 1995; and Kannan, 2004) provided these type of complete listing given in this research. Hence, this research fills this gap by consolidating the available TQM and JIT practices for organizational success.

4. Gaps in the Existing Integrated TQM and JIT Practices

The authors of the present research argue that the existing TQM and JIT integrated approaches (Vappalapati et al, 1995; Rack ,1995; and Kannan, 2004; Cua et al.,200; Flynn et al.,1995, Anh and Matsui, 2007) are not analogous. This study provides a consolidated result (see table 3). Moreover, these existing literatures described TQM and JIT as company-wide programs. The studies mainly confer the involvement of internal workforces and management, suppliers, and the customers. However, as Nelson (1993) noted, in addition to the interactions that must exist among these three actors, continual growth of a company must also involve continuous interactivity of the core company with universities, standard setting bodies, banks, and other critical social and economic actors. Similarly, Nakamura et al. (1998) justified that long-term relationships are necessary among firms, workers, banks, and other participants in the business system.

However, as identified in table 3 above, the existing TQM and JIT practices have very little concern about the necessity of the long-term relationship that should subsist among the core company and the other stakeholders as discussed above. Furthermore, changes about introduction of new machines, equipment and processes that can be brought about by turbulent or unstable business environment frequently challenge developing countries (Adediran, 1996). Porter (1998) discussed that for companies to achieve and sustain competitive advantages, they must act on innovation that in turn depends on accumulation of insights. Firm's performance depends upon their internal organization and accumulated knowledge (Leibenstein, 1996). These show that companies need to develop a system that can accumulate innovative technological capabilities in order to promote incremental and continuous innovation that can allow creating, modifying or improving products and process to continually enhance organizational successes.

If the TQM and JIT principles have to be effective, mainly for the firms in developing countries which need technology from the developed countries once for their success, additional TQM and JIT practices which are concerned with "technological capability accumulation process" must be developed. Thus, this research suggests that these two practices ("integration with external stakeholders" and "technological capability accumulation process") have to be incorporated into the existing integrated TQM and JIT practices in order to enhance the organizational interactivity with its wider stakeholders in order to continually accumulate and apply technological capability to organizational innovativeness (see also figure 1).

5. The New Model: TQM and JIT Integrated Model- An Innovative Framework

For manufacturing companies to achieve enhanced performance, sustainable competitive advantages, and ultimately global success, this study proposes a new TQM and JIT integrated framework (see figure 1 below). The general approach of this new model can be explained as follows: the proposed TQM and JIT integrated model has 15 TQM and JIT constructs/practices. Thirteen of them are taken from table 3, which are the JIT and TQM integrated practices commonly cited in the existing literatures. In addition, two practices "integration with external stakeholders" and "technological capability accumulation process" are considered as the two new practices which are very vital to organizational competitive advantages and global successes.

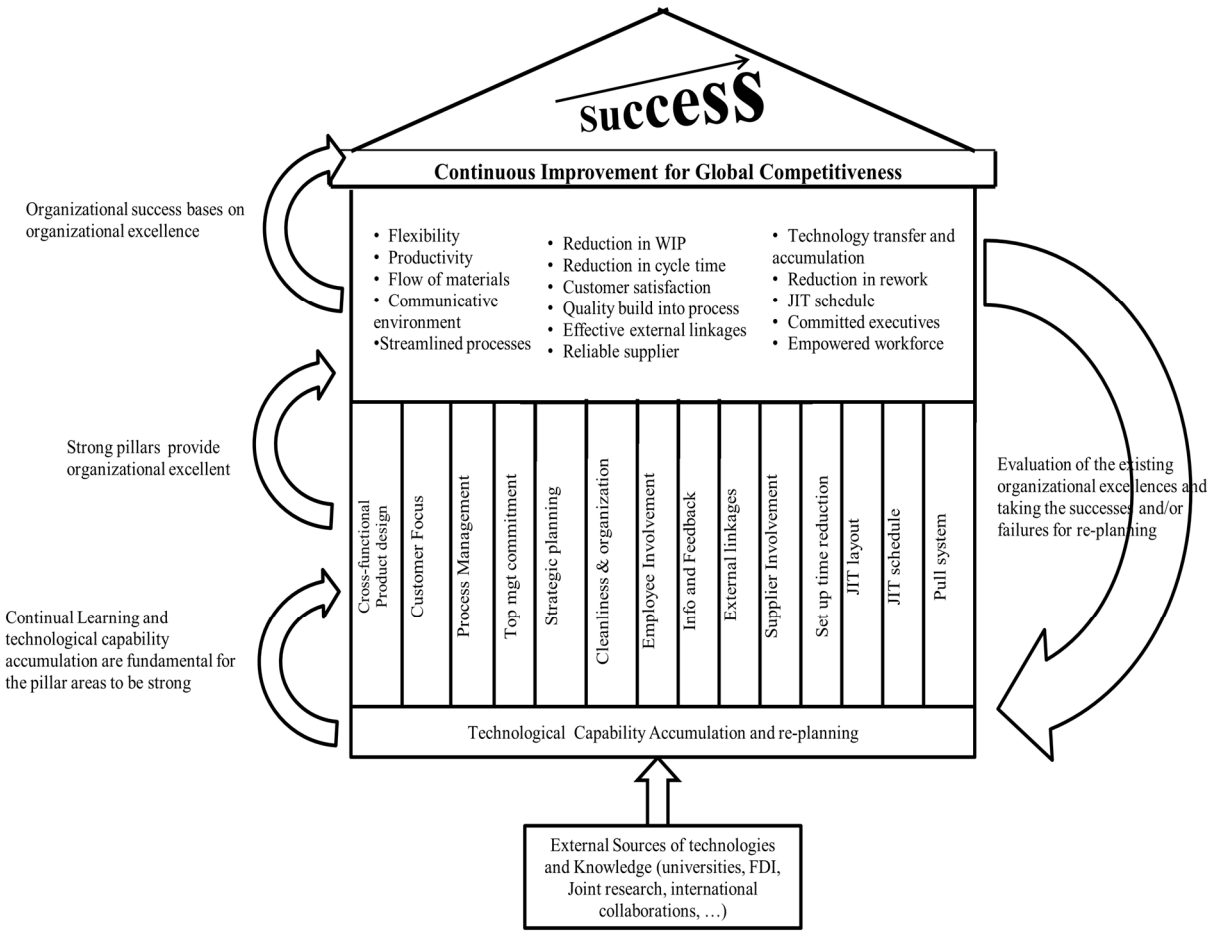

Fig. 1. An Innovative TQM and JIT Integrated Model

The goal of the proposed model is to bring about organizational success through the implementation of continuous improvement (as shown at the top of Fig 1). To be successful, companies should maintain vital organizational excellences such as flexibility, productivity, smooth flow of materials, effective organization-wide and external communications and linkages, streamlined processes, reduced inventory, minimum cycle time, customer satisfaction, designing quality into processes, and technology learning, accumulation, and utilization capability, etc. These organizational excellences can be achieved when the areas of practices are strongly designed and organizational commitments are maintained for their accomplishments. If one area of practice is weak, one or some of the organizational excellences cannot be realized, and this will affect the success and global competitiveness of the companies. The strength and accomplishment of the areas of practices, in turn, depend up on the effort of the companies to learn and accumulate knowledge and technologies from different sources. According to this model, for organizational excellence and global competitiveness, knowledge and technology transfer and their accumulation are crucial foundations. For firms in developing countries, firms need to become familiar with various ways of acquiring knowledge and apply this knowledge for production to innovation themselves (Marcelle, 2012). The companies can acquire the necessary knowledge and technology through systematic way of interaction and learning from external sources of technologies and knowledge (universities, FDI, Joint research, international collaborations etc.) and from the

successes and failures of their own via evaluating the existing organizational excellence and re-planning the changes (refer the arrow at the right side of the figure).

Our new model is quite different from the existing TQM and JIT integrated approaches suggested by existing literatures (e.g., see the models/frameworks suggested by Flynn et al., 1995; Sriparavastu and Gupta, 1997; Ahn and Matsui, 2007; Cua et al., 2001; Vappalapati et al., 1995; Rack, 1995; and Kannan, 2004). One of the differences is that it provides consolidated results of the most frequently cited practices of the existing integrated approaches of TQM and JIT (please see table 3). Secondly, the new model added two additional practices to the existing TQM and JIT constructs, illustrated in table 3. These two additional features of our new model are the requirements of external linkages that should exist between the core company and the majority of its stakeholders and technological capability accumulation process. These two additional practices are very useful for manufacturing firms operating in developing countries. They are neglected in the existing literature due perhaps to the fact that the existing literatures are more leaned towards the situations of the firms of developed nations.

The proposed framework is an innovative framework as it helps companies to base their organizational performance on technology/knowledge transfer from external sources such as universities, FDI, Joint research, and international partnerships as well as internal sources such as existing organizational performance based on evaluation and re-planning (from its success or failure). In general, companies require successful technological learning and accumulation to enhance the strengths of each areas of practice, which in turn it successively brings about organizational excellence, competitiveness and successes through continual improvement effort. In general, due to its superior features, this new model can create better insight into the scientific audience and industrial applications.

6. Practical Case Application to Test the New Model

This section gives the practical application of the suggested model. Hence, the model is applied to evaluate the performance of the Ethiopian leather and leather manufacturing companies. Questionnaire with a likert-scale (1 = very low, 2 = low, 3 = good, 4 = very good, and 5 = excellent) was used to evaluate the performance of the case companies. Representative number of the companies was included in the study with a response rate of 76.4%. To justify some of the results obtained from the questionnaire, secondary data were collected from Ethiopian Central Statistical Agency (CSA).

China (33.66%), Italy (10.83%), Hong Kong (6.3%), France (4.46%), and Germany (3.83%) are the major leather and leather goods exporters in the world with their shares indicated in the parenthesis. Moreover, while developing countries hold a 45% share of world trade in leather manufactures, yet Africa shows only a modest increase. Though African countries have 20% of the world's cattle, sheep, and goat productions, the continent accounts for only 11% of world production of cattle hides, goat and sheep skins. This shows that there is a wide gap between resources and production in the continent. Hence, in Africa, the exports of hides and skins have fallen in recent years from 4% to 2%, and their tanning capacity from 9.2% to 6.8% (Alubel, 2015).

The Ethiopian leather industry has been accorded a special attention for its expansion to join the international market in a large scale (Tesfaye et al, 2014). There was a plan to grow export from leather and leather products to $500mill by the end of 2015. However, exports were less than $150 million in 2014. Other research works (such as Sutton and Kellow, 2010; Ethiopian Leather Journal, 2011) indicated that the competitiveness of the Ethiopian leather and leather industry is far below the world standard. For instance, the tanning and dressing of leather, luggage and handbag industries were operating at 56 percent of production capacity and the capacity utilization for shoe firms is as low as 48% (UNIDO, 2012). To revert this situation, these companies shall improve their performance through small, but continuous refinements in their operations. Using the questionnaire, this research identified the performance gap in all of TQM and JIT integrated model developed in fig 1. The result is shown in fig 2.

The gaps are explained below:

1. Top Management Commitment

It is ascertained that there is a low commitment of the top management in terms of mobilizing the required resources, communicating strategic plans, quality policy, and objectives. Mostly, decisions are not made based on data/facts.

2. Strategic Plans

Though the companies surveyed have strategic plans of their own, they are not pragmatic. Moreover, they do not strongly promote continuous improvement and do not prudently implement them to achieve significant results.

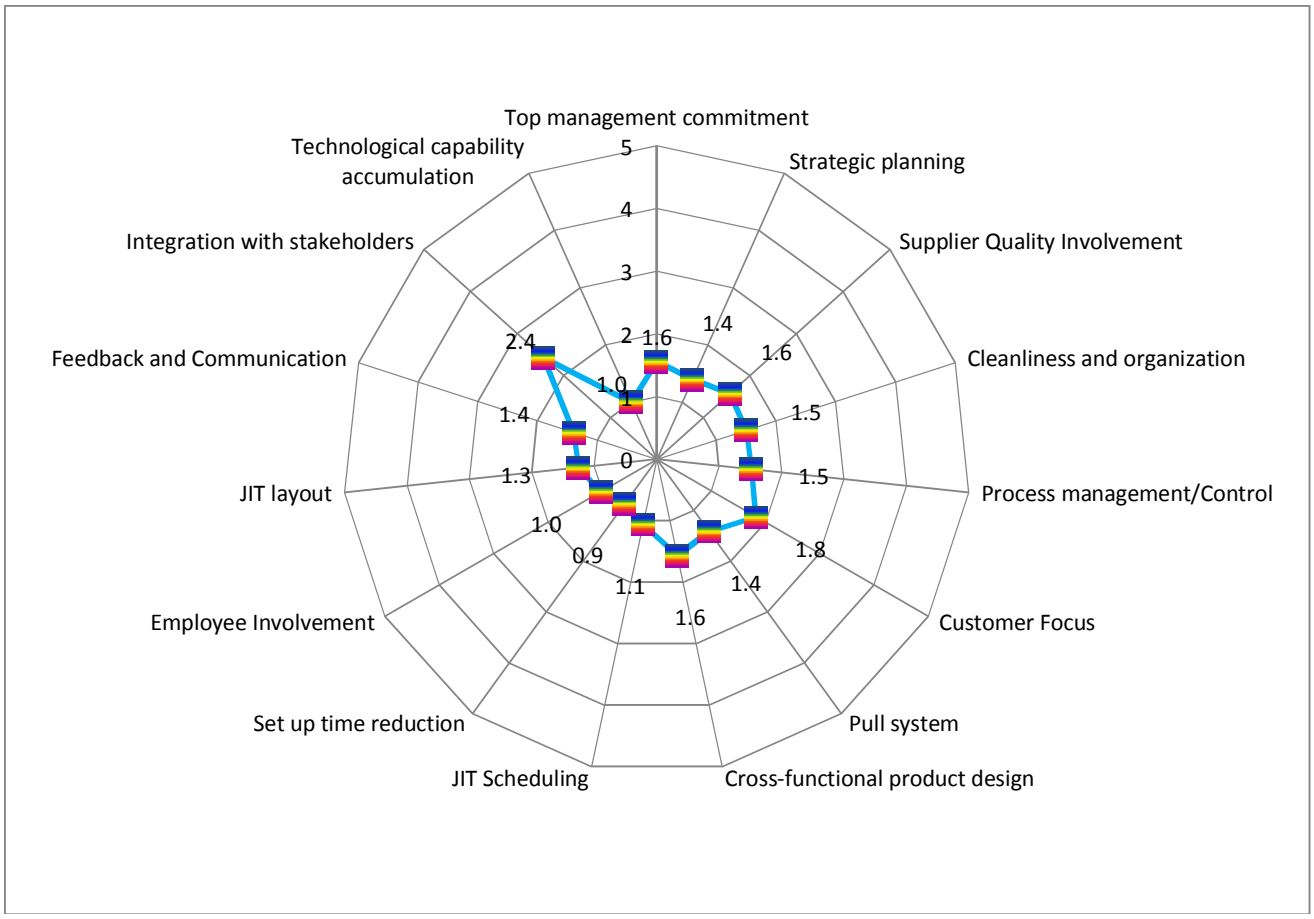

Fig. 2. Performance gap in the Integrated TQM and JIT Practices for the Ethiopian Leather and Leather Manufacturing Companies

3. Supplier Quality Involvement

The major gaps identified in this area are the absence of regular supply of raw hides and skins, unreliable price, quality, and delivery lead time. Instead of involving the supplier, the companies mainly use inspection to check the quality of raw materials each time. The Ethiopian Central Statistical Agency (CSA) report also indicated that about 20% of the firms produce under capacity due to problems of raw materials.

4. Cleanliness and Organization

In this category, the lack of neatness, cleanliness, and orderliness of the workplaces and the lack of industrial safety rules and guidelines were identified as the major problems.

5. Process Management/Control

The companies are challenged by the absence of focus to process measurement and controls activities. There is no reactive type of process management, quality is not built into process, and there is no continual and extensive training in statistical process control tools.

6. Customer Focus

Customer satisfaction is not seen as the companies' highest priority. The Ethiopian Central Statistical Agency (CSA) also reported that about 23% of the firms reported market demand as a first problem for their under capacity production.

7. Pull System

It is identified that the companies are using large inventories of raw materials and work in process. Without determining their requirements, materials are pushed into downstream processes.

8. Cross-functional product design

The interaction existing among various departments (such as product design, process design and marketing departments) is low. As a result, it is ascertained that to develop products (mainly new products), the organizations take larger lead time.

9. JIT Scheduling

Due to the absence of JIT scheduling, the companies do not meet daily production schedule. There is lack of coordination to avoid delays, and operators are not well-trained to apply preventive maintenance.

10. Set up time reduction

This is the most seriously affected area among the identified practices of TQM and JIT practices. Operators are not well-trained to reduce set up time; as a result, the companies are unable to produce products in small lots.

11. Employee Involvement

Employees are not well-motivated and empowered to seek out quality problems, to make continual improvements, to promote innovation, and to meet regularly in teams to evaluate their effectiveness.

12. JIT Layout

There is no or very limited streamlined flow of operations. There are no mechanisms in place to properly layout machineries. As a result, there are large inventories between machines and large material handling distances.

13. Feedback and Communication

The vision, mission, and value statements are not properly communicated to the workforce. The communication system lacks a feedback loop (for quality and productivity). The flow of information along the organizational hierarchical structure is not fast.

14. Integration of the companies with their stakeholders

The organizations do not have apparent value-added linkages among themselves. The linkages with academia, the supports provided by the Ethiopian customs and revenue authority and logistic providers, the poor and deteriorating infrastructure of roads, power supply, and telecommunications affect the performance of the companies. This calls for their value-added integrations.

15. Technological capability accumulation

The companies are not aware of the technological capabilities of the best actors in the sector. There is a lack of clear strategy to transfer knowledge and technology from different sources. It can be said that the companies do not have a proper system to plan for proper technologies. They are just passive receivers and users of foreign technologies.

To alleviate their problems, the firms in the Ethiopian leather industry need to implement the new TQM and JIT integrated model suggested in this research. The model is considered to be innovative in that it starts with technology transfer to continuously innovate the practices included in the model. The model has a cycle with no end to show that these firms need a dynamic process of knowledge transfer, knowledge accumulation, and its practical application to catch up firms of the developed world. These technologies must be accumulated and embodied in individuals (skills, expertise, and experience) and organizational routines and systems, and it must be continually updated and developed.

7. Conclusion

For manufacturing companies to produce better and cheaper products rapidly and continuously, hybrid programs, such as integrated TQM and JIT practices, give better results. JIT production is a manufacturing philosophy which is designed to eliminate all kinds of wastes where as TQM is the application of quality principles to all facets of an organization. Integrated approaches of TQM and JIT are useful to provide the comprehensiveness of the two approaches. However, the existing integrated TQM and JIT practices in literatures are not analogous. To mitigate this problem, this study reviewed the most widely cited TQM and JIT practices and provided fourteen TQM and JIT integrated practices such as setup time reduction, JIT schedule, JIT layout/equipment layout, pull system, cross-functional product design, customer involvement/Focus, process management/ control, strategic planning, top management commitment, cleanliness and organization or plant environment, workforce management/Employee involvement, supplier quality involvement/supplier relationship, and information feedback, and communication.

Moreover, the existing literatures described TQM and JIT as company-wide programs; as a result, the effectiveness of the two programs to link the core company to its various stakeholders (other than suppliers and customers) is limited. Furthermore, if the TQM and JIT principles have to help mainly the firms in developing countries towards fulfilling the needs of their technological and knowledge requirements from different sources (and hence, technology transfer and its accumulation), additional TQM and JIT practice, which is concerned with technological capability accumulation process, must be added to the existing ones. The case study used in this research proves the significance of the new model proposed in this research. According to the case study, the Ethiopian leather and leather manufacturing companies have low performances in all the areas of TQM and JIT integrated practices. Finally, it can be concluded that the competitiveness and success of manufacturing companies rely on their capability of these practices. Accordingly, companies have to undergo a total revolution in all the dimensions of the integrated TQM and JIT practices proposed in this research in order to improve their global competitiveness.

References

Adediran, Y.A. (1996). Total Quality Management in Engineering Product Design. *College of Engineeirng Conference Series*, 3, pp. 27-30

Agus, A. (2005). The Structural Linkages between TQM, Product Quality Performance, and Business Performance: *Preliminary Empirical Study in Electronics Companies. Singapore Management Review*, 27(1), 87-105

Alubel, M. (2015). Revealed Comparative Advantage of Ethiopian Leather Industry with Selected African

Economies. *International Journal of Business and Economics Research.*, 4(5), 229-237

Anh, P.C., & Matsui, Y. (2007). Effects of Total Quality Management and Just-In-Time Practices on Competitive Performance – Empirical Evidence. Yokohama National University, Japan.

Bessant, J., Caffyn, S. & Gallagher, M.(2001) "An Evolutionary Model of Continuous Improvement Behavior", *Technovation*, 21(1), 67–77.

Bhuiyan, N. & Baghel, A. (2005). An Overview of Continuous Improvement: From the Past to the Present. Management Decision, *Emerald Group Publishing Limited*, 43(5), 761-771

Chang, G. (2008). Quality Management in Supply Chain Based on ISO9000. *International Journal of Business and Management,* 3(4), 150-152

Cua, K.O., McKonea, K. E., & Schroederb, R. G. (2001). Relationships between implementation of TQM, JIT, and TPM and manufacturing performance. *Journal of Operations Management*, 19, 675–694

Dean, Jr. JW & Snell, SA. (1996). The Strategic Use of Integrated Manufacturing: An Empirical Examination. *Strategic Management Journal*, 17, 459–480

Feigenbaum, A.V. (1986). Total Quality Control, 3rd ed., McGraw-Hill Book Company, New York, NY

Figueiredo. P.N. (2008). Dynamics of Endogenous Capability Building and the Role of Technological Learning Processes in Developing Countries: Manchester Institute of Innovation Research.

Flynn, B.B., Sakakibara, S., & Schroeder, R.G. (1995). Relationship between JIT and TQM: Practices and Performance. *Academy of Management Journal,* 38(3),1325–1360

Gunn, T. G. (1987). Manufacturing for Competitive Advantage: Becoming a World Class Manufacturer. Cambridge, MA: Ballinger. Hair.

Imai, M. (1987). Kaizen-The Key to Japan's Competitive Success. Random House, New York.

Kannana, V.R. & Tanb, K.C. (2004). Just-In-Time, Total Quality Management, and Supply Chain Management: Understanding their Linkages and Impact on Business Performance. *The International Journal of Management Science,* 7(1), 184 - 197

Kootanaee, A. J., Babu, K. N., & Talari, H. F. (2013). Just-In-Time Manufacturing System: From Introduction to Implement. *International Journal of Economics, Business and Finance,*1(2), 07-25

Kossoff, L. (1993). Total Quality or Total Chaos?, HR Magazine, 38(4), 131-134

Kumar, V. (2010). JIT Based Quality Management: Concepts and Implications in Indian Context. *International Journal of Engineering Science and Technology.* 2(1)

Leibenstein, H. (1976). Beyond Economic Man. A New Foundation for Microeconomics. Harvard University Press, Cambridge.

Marcelle, G. (2012). Firm-Level Innovation: Implications for Policy and Practice United Nations Commission on Science and technology for development CSTD 2011 -2012 Inter-Sessional Panel

Mullarkey, S., Jackson, P.R. & Parker, S.K. (1995). Employee Reactions to JIT Manufacturing Practices: a Two-Phase Investigation Institute of Work Psychology. *International Journal of Operations &Production Manage,* 15(11), 62-79

Munizu, M. (2013). The Impact of Total Quality Management Practices towards Competitive Advantage and Organizational Performance: Case of Fishery Industry in South Sulawesi Province of Indonesia. *Pakistan Journal of Commerce and Social Sciences*

Muthoni, D. K. (2015). Factors Influencing the Adoption of Just-In-Time Management by Electronics Micro, Small and Medium Enterprises in Luthuli Avenue of Nairobi County in Kenya. *Journal of Engineering and Economic Development,* 2(1), 1-12

Nakamura M, Sakakibara S, & Schroeder RG. (1997). Adoption of Just-In-Time Manufacturing at US and Japanese Owned Plants: Some Empirical Evidence. IEEE, *Transactions on Engineering Management,* 45(3), 230–240

Nelson, R. (1993). National Innovation Systems: A Comparative Analysis, Oxford University Press

Nicolas, J. M. (1998). Competitive Manufacturing Management. Continuous Improvement, Lead Production, and Customer-Focused Quality. Tata McGraw-Hill Publishing, New Delhi, India.

Roth, A.V., & Miller, J.G. (1992). Success Factors in Manufacturing. *Business HorizonsI,* Vol.35, No.4, pp. 73–81.

Shrivastava, R.K., & Sridhar, K. (2015). Implementation Aspects of Just in Time in Indian Industries. *International Journal of Engineering Research & Technology, IJERT,* 4(5), 1379-1387

Sriparavastu, L., & Gupta, T. (1997). An empirical study of Just-in-Time and Total Quality Management Principles Implementation in Manufacturing Firms in the USA. International *Journal of Operations and Production Management,*17(2), 1215–1232

UNIDO. (2012). Technical assistance project for the upgrading of the Ethiopian leather and leather products industry UNIDO project number: TE/ETH/08/00

Yu, L., & Ding, J. (2009). In Search of Continuous Improvement Tools. Results of the 2nd International Continuous Improvement Survey. Master's Thesis in Innovation management, University of Gavile.

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