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A STUDY ON QUALITY MANAGEMENT TOOLS PREFERRED BY OPERATION AND SUPPLY CHAIN MANAGERS

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Abstract

This paper reports the results of a comparative study of quality management practices and tools adoption by operations and supply chain managers. A survey was administered to both types of managers in Madhya Pradesh. Performing a **Kruskal Wallis analysis**, we found support for the hypothesis that operations and supply chain managers approach quality management differently. We found that those who identified themselves as supply chain managers utilized and emphasized quality tools and values to a greater extent than those who identified themselves as operations managers. The tools emphasized by supply chain managers included benchmarking, complaint resolution, design for the environment, ERP, supplier development, focus groups, and supply chain management We found that operations managers tend to manage supply chains through procedural methods such as ISO 9000 and supplier evaluation. Supply chain managers tend to be more collaborative, emphasizing supplier development and complaint resolution. We found that both types of managers adopted on the job training, data analysis, supply chain management, customer relationship management, project management and surveys.

***Keywords*: supply chain management; operations management; quality management; quality control**

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1. INTRODUCTION

With the growth of the field of supply chain management, a great deal of effort has gone into defining and creating the related field of supply chain quality management (SCQM) (Flynn et al. 1994, Choi and Eboch 1998, Kuei et al. 2001, Spekman et al. 2002, Flynn and Flynn 2005, Foster 2008, Kaynak and Hartley 2008). SCQM has been defined as: '. . . a systems-based approach to performance improvement that leverages opportunities created by upstream and downstream linkages with suppliers and customers' (Foster 2008).

Operations management has traditionally been explained by some version of an 'inputs – transformation process – outputs' view of the productive capability of the firm. From a quality perspective, operations managers have focused on internal activities such as process control, process improvement, product design improvement, and design of experiments. As a result, most six sigma improvement projects have focused on internal processes and cost reduction (Linderman 2008). Of course, the importance of suppliers and customers has long been emphasized by quality experts. This is found in Deming's (1986) point about purchasing and not focusing on cost alone. We term the change of focus from an internal process orientation to one that emphasizes linkages with upstream and downstream firms 'externalization'.

Our theory is that as managers become more externalized; they will tend to adopt methods that are more holistic in nature – capturing not only internal processes but upstream and downstream processes and dynamics. With the emphasis on supply chain management, the roles of inter-firm and customer linkages have been elevated (Fawcett et al. 2006).

This increased emphasis on linkages may have implications for how quality management is practiced and what is emphasized by quality managers. In this paper, we explore the differences between quality management practices of operations managers and supply chain managers, including what quality tools are emphasized by each type of manager. The term 'tool' is used broadly for this study. 'Tool' can mean a method such as benchmarking, an approach to improving quality such as process improvement (PIT) teams, or a managerial concept such as leadership. While SCQM is still in the definitional stage, rigorous studies of SCQM practices and tools have yet to emerge.

It is expected that this study will provide direction for researchers and instructors of quality management who wish to emphasize supply chain management.

2. LITERATURE REVIEW

Supply chain management has developed as a field from the integration of operations and marketing management (Flynn and Flynn 2005). As a result, linkages with upstream firms– which was once the domain of purchasing – has been elevated in importance. The quality management precedence for this is found in Deming's fourth point, 'End the practice of awarding business on the basis of price tag alone. Instead, minimize total cost. Move towards a single supplier for any one item, on a long-term relationship of loyalty and trust'. This has resulted in a merging of quality management and supply chain management principles. Those who handle purchasing and logistics functions have gained a more quality-minded approach, and operations managers have increased their external focus on customer satisfaction (Foster and Ogden 2008). However, more work is needed as this merger is still far from complete and quality practices must advance even further from a traditional firm-centric and product-based mindset to an inter-organizational supply chain orientation involving customers, suppliers, and other partners (Robinson and Malhotra 2005). Miller (2002) stated that one of the key issues needing exploration was how supply chain management integrates with other operational performance initiatives such as lean manufacturing, quality management, and new product development.

With the advent of SCQM, there appears to be support for the notion that integrating quality and supply chain management and their supporting functional areas is important to the success of organizations (Gustin 2001, Narasimhan and Das 2001, Hutchins 2002, Pagell 2004). Supply chain management practices can result in operational benefits such as decreased production lead times, reduced costs, faster product development, and increased quality (Davis 1993, Billington 1994). It can also play a role in the success of quality management initiatives (Carter and Narasimhan 1994). In an early article about SCQM, Levy et al. (1995) discussed 'total quality supply chain management' and associated integration issues and Kuei et al. (2001) pointed out that organizational performance can be enhanced through improved SCQM.

Trent and Moncza (1999) examined how purchasing and sourcing activities contributed to total quality and concluded that purchasing and supply chain managers can positively affect supplier quality.

While SCQM can provide benefits, it is not easily accomplished. The structure and culture of an organisation, reward systems, and the amount or lack of communication across functions have been identified as factors that inhibit or promote integration within the organization (Pagell 2004). In an article calling for the integration of quality and supply chain management, Theodorakioglu et al. (2006) found a significant positive correlation between supplier management practices and total quality management practices. Quality has always been one of the most important performance criteria, even with a conventional purchasing strategy. Bessant (1990) pointed out that buyer-supplier relationships that were once based on price have shifted to a number of non-price factors, with quality in first position. Many buyer-supplier relationships have evolved into partnerships at the stage of product design and development. Bevan (1987) pointed out that as these supplier relationships evolved, the role and definition of quality changed, and thus we see the attention that supply chain management quality is receiving in the literature.

Foster and Ogden (2008) showed that supply chain managers tended to emphasize quality tools and quality values more than traditional operations managers. This research builds on that work to examine specific patterns of quality tool adoption and emphasis. There is an old adage that, 'Our actions demonstrate who we are'. This can be said for operations and supply chain managers. By understanding how they differ in quality tool adoption, we can better understand SCQM. Hence, the following hypothesis:

H0: Supply chain managers and Operations managers will utilize quality practices and tools differently.

The primary focus of this research is to aid in the understanding of the domain of SCQM by exploring both the use of quality tools in practice and the diversity of approaches. What tools and methods are emphasized as we move to more of a supply chain focus? Just as importantly, what practices will not be emphasized as much?

2.1 Tools

Prior studies have discussed particular tools relating to supply chain quality (Sila et al. 2006). In a preliminary phase of this study, we asked a group of 20 graduate students in quality management to create an affinity diagram of the 57 tools listed in this study. Whilst the tools and approaches found in this study are not all-inclusive, they do represent a wide variety of approaches utilized in industry. The resultant affinity diagram with categories is shown in Table 1.

Process oriented tools are primarily focused on improving the efficiency and quality of production methods. Benchmarking is one such tool. Camp (1994) argues that benchmarking is most useful in the context of process. This allows companies to compare processes and to chart courses for improvement. Enterprise resource planning (ERP) systems are focused on managing production processes and information throughout the firm (Ptak and Schragenheim 2003). JIT (just-in-time) and lean are approaches that focus on improving process efficiency and resource usage (Wedgwood 2007).

Quality awards can be used to reward outstanding process management and performance (Hendricks and Singhal 2001). Six sigma black belts use DMAIC to work on improving process

Table 1: Quality Tools Included in the study

Process Tools	**Statistical Tools**
Benchmarking	Control Charts
ERP	Computer- aided Testing(CAT)
JIT	Computer -aided Inspection
Six Sigma	Gage R & R
DMAIC	
Lean	
Basic Tools	**Supply Chain Tools**
Data Analysis	Supply Chain Management
Project Management	Customer Relationship Management
Surveys	Supplier Evaluation
Cost of Quality	Supplier Development
PERT	Complaint Resolution

7 Basic Tools	Single Sourcing
	ISO 9000
	SERVQUAL
Design Tools	**Management Tools**
Prototyping	leadership
Design Teams	On the Job Training
QFD	Change Management
CAD	Human Resource Management
Quality Assurance Design	Deming
Robust Design	Quality Circles
Reliability Indexes	PDCA
Design For Manufacture	Contingency Theory

Our basic tools classification is somewhat expansive. The basic seven tools of quality include well-known tools such as flowcharts and Ishikawa charts (Ishikawa 1985), and advanced managerial tools such as affinity diagrams that are used for handling more subjective data in managerial decision making (Brassard 1989). Program evaluation and review technique (PERT) is a tool used in managing projects (Kerzner 2005). Data analysis involves gathering, testing, and performing analysis on data (Evans and Lindsay 2007). Quality control professionals are very familiar with statistical tools such as control charts, computer-aided testing (CAT) and inspection, and Gage R&R. Control charts are used in monitoring process stability from sampled data (Grant and Leavenworth 1996). Computer-aided testing is used to check that component parts, sub-assemblies, and full systems are within specified tolerances and also perform up to specification (Meredith 1987). Computer-aided inspection is used in examining products for defects during or after the production process (Meredith 1987). Gauge repeatability and reproducibility (Gage R&R) is used to ensure that measurements are accurate.

The supply chain tools and approaches are focused on upstream and downstream interactions. Supply chain management is defined as involving process management and project management to meet customers' needs collaboratively (Fawcett et al. 2006). Complaint resolution is a closed-loop process for gathering, resolving, and utilizing customer complaints for improvement (Evans and Lindsay 2007). Supplier development involves sharing knowledge with customers to improve their quality and service to the customer (Kaynak and Hartley 2008). Supplier evaluation is the process of grading and registering suppliers at times using standards such as ISO 9000 (Sroufe and Curkovic 2008). The customer benefits package is a tool for identifying those services that will be provided to customers (Collier 1994). Single sourcing is a process for reducing the numbers of suppliers for a particular item to one (Lee and Ansari 1985).

Design tools are primarily approaches to improving products in order to satisfy customers. Environmental or green design is focused on reducing negative impacts of products and processes (Foster et al. 2000). Quality function deployment (QFD) or 'house of quality' is an approach to design that aids in communication between engineers and marketers (Hauser and Clausing 1988). Computer-aided design (CAD) utilizes systems to aid in the design process (Meredith 1987). Concurrent design uses design teams to reduce the time required to generate new product designs (Nevins and Whitney 1989). Quality assurance design is a concept that states that quality is only guaranteed through efficacious design processes. Robust design is a Taguchi (Taguchi et al. 1989) concept that results in products that will maximize benefit to society.

Management tools are concepts, tools, and approaches used in directing efforts to satisfy customers. Leadership is included in this research as the literature is unanimous that effective leadership is necessary in managing quality (Foster 2010). On the job training was proposed by Deming (1986) as necessary to create a culture conducive to quality production. Change management involves a variety of approaches to directing the implementation of new ideas and approaches to performing tasks (Evans and Lindsay 2007). Human resources management (HRM) is the process of directing people to benefit the organization (Cardy et al. 2000). A system thinking was suggested by Deming (1986) as a way to view processes holistically to understand how components of a system interact to create customer value.

Again, this listing of methods is not intended to be all-inclusive. However, these tools are a broad collection of approaches to improving quality that will provide insights to the differences between how operations and supply chain managers approach quality improvement.

2.2 Diverse approaches

The theory motivating this research is borrowed from anthropology and has been applied in other fields such as information systems (Olson and Ives 1981).

Theory relating to diversity states that individuals from differing social systems and structures may process information and solve problems differently potentially adding to the richness of solutions (Cox and Blake 1991, Reagans and Zuckerman 2001, Canas and Sondack 2008). In systems science, research has been performed examining differences between users and analysts (Olson and Ives 1981). Earlier research studies examined the differences between scientists and generalists. Since operations management grew out of the scientific orientation the field was originally dominated by engineers and mathematical modellers. As an example of this phenomenon, empirical research has only recently been widely accepted in operations circles (Swamidass 1991). On the other hand, supply chain has grown out of the fields of marketing and logistics (Fawcett et al. 2006). From a research perspective, this field has been characterized as having a longer tradition of empirical work and more emphasis on collaboration and cooperation (Fawcett et al. 2006). Since these diverse management traditions exist, it is expected that operations and supply chain managers will approach the solution of quality problems differently. However, there is very little research examining difference in practices between operations and supply chain managers (Foster and Ogden 2008). It is expected that this research will help to address this gap.

3. METHODS

Data for this study was gathered by inviting participants to complete a web-based as well as off line survey. The survey included seven-point Likert scales that allowed respondents to rank the extent to which they utilized various quality tools or approaches to their work. The items were drawn from the most commonly applied tools in quality management and tools that were selected from the SCQM literature.

These lists of tools were submitted to a panel of six supply chain and quality managers to externally validate their inclusion in the survey. As a result, one tool was removed from the survey and two were added. Not all survey items were used in the analysis for this paper. While the listing of tools for this research is not all inclusive – there are literally hundreds of tools in the literature – we completed a list of 40 tools that is representative of major areas of quality including process tools, basic tools, statistical tools, supply chain tools, design tools, and management tools.

We utilized seven-point Likert scales (strongly disagree, disagree, moderately disagree, neutral, moderately agree, agree, strongly agree) that allowed respondents to rank the extent to which their companies utilized the various tools. Chronbach's alpha was computed with alpha > 0.95 for all of the items, providing evidence of internal content validity. Comments were received from the initial respondents. While some minor adjustments were made to the form of the survey, no items were added or deleted as a result of the test.

We collected 100 respondents (though surveys from online as well as offline)) out of 184 potential respondents, for a 54% response rate. The response rate was the result of working closely with the chapters to maximize the success of our research efforts. To enable the comparison of quality practices based on a given perspective, the survey respondents were asked to identify their jobs as primarily operations management oriented or primarily supply chain management oriented. The organizations we selected for this study are relevant to the study of differences in perceptions between operations and supply chain managers. The responses of the two groups were compared in our analysis. It should be noted that the two sample groups were mutually exclusive in that no particular respondent responded to the survey more than once.

4. RESULTS

Using SAS, we examined differences in the utilization of quality tools between operations managers and supply chain managers. For each quality tool, the items were worded in this manner: 'Within the context of your organization, the following quality tools are utilized'. The respondent then rated each tool on a separate seven-point scale. The summary means of these items are contained in Table 2.

We computed and found the differences between mean responses for operations and supply chain managers. A positive difference indicates that a particular tool is utilized to a greater extent by supply chain managers than by operations managers. Conversely, a negative response means that operations managers tended to emphasize a particular tool more than supply chain managers. To test our hypothesis, we then ranked the quality tool means and performed a Kruskal Wallis test to analyse differences in ranks where the treatment was type of manager. Kruskal Wallis is perhaps the most widely used non-parametric technique for testing whether different samples have been drawn from the same population (Daniel 1990). Kruskal Wallis is often referred to as a one-way analysis of variance for ranks. The Kruskal Wallis test statistic is a weighted sum of squares of deviations of sums of ranks from the expected sum of ranks.

The Kruskal Wallis test statistic is computed as:

$$K = (N\text{-}1)\,\frac{\sum_{i=1}^{g} n_i\,(\bar{r}_i - \bar{r})^2}{\sum_{i=1}^{g}\sum_{j=1}^{n_i} (r_{ij} - \bar{r})^2}$$

Where: n_i = is the number of observations in group i;

r_{ij} = is the rank of observations j from group I;

N = is the total number of observations across all groups.

$\bar{r}_i = (\sum_{j=1}^{n_i} r_{ij})/n_i$ *and* $\bar{r} = \frac{N+1}{2}$ *is the average of all the* r_{ij}.

Table 2: Mean scores and differences for tools.

SC Tools	SC Score	OPs Score	Difference
On the job training	5.65	4.79	0.86
Data analysis	5.57	5.02	0.55
Supply chain management	5.54	4.93	0.61
Customer relationship management	5.44	4.95	0.49
Leadership	5.44	4.56	0.88
Benchmarking	5.3	4.49	0.82
Project management	5.21	4.95	0.26
Complaint resolution	5.09	4.26	0.83
Supplier development	5	4.38	0.62
Change management	4.93	4.14	0.79
ERP	4.91	4.21	0.7
Human resources management	4.91	4.6	0.3
Supplier evaluation	4.86	4.74	0.11
Design teams	4.82	4.88	-0.06
QFD	4.71	4.83	-0.12

JIT	4.64	4.44	0.19
Lean	4.53	4.42	0.11
CAD	4.52	4.91	-0.39
Control charts	4.48	4.17	0.32
Costs of quality	4.33	3.88	0.45
Contingency theory	4.19	3.84	0.36
Computer-aided testing (CAT)	4.18	4.4	-0.21
Prototyping	4.16	4.74	-0.57
Single sourcing	4.16	3.79	0.37
ISO 9000	4.14	4.84	-0.69
Computer aided inspection	4.11	4.12	-0.01
Quality assurance through design	4.11	3.62	0.49
Six sigma	4.07	3.53	0.54
Deming	4.05	3.47	0.59
PERT	3.96	3.76	0.2
Design for manufacture	3.96	3.98	-0.01
Quality circles	3.93	3.81	0.1
7 basic tools	3.92	3.81	0.12
Reliability indexes	3.87	3.48	0.4
PDCA	3.82	3.91	-0.09
Gage R&R	3.76	3.84	-0.08
Robust design	3.75	3.81	-0.06
DMAIC	3.75	3.51	0.23

Note: *Kruskal Wallis statistic (K) = 6.12; df =1; p< 0.025.

As can be seen in Table 2, the Kruskal Wallis statistic of 6.12 was significant ($p < 0.025$). This means that there was a significant difference in the mean rankings attributed to different tools when comparing operations and supply chain managers. Note that the Kruskal Wallis statistic pertains to the entire list of items, not just single items.

Table 3: ***Tools rankings for operations and supply chain managers.***

SC Tools	**SC ranks**	**Ops ranks**	**Diff***
On the job training	1	8	-7
Data analysis	2	1	1
Supply chain management	3	3	0
Customer relationship	4	2	2

management			
Leadership	4	11	-7
Benchmarking	5	12	-7
Project management	6	2	4
Complaint resolution	7	17	-10
Supplier development	8	16	-8
Change management	9	20	-11
ERP	10	18	-8
Human resources management	10	10	0
Supplier evaluation	11	9	2
Design teams	12	5	7
QFD	13	7	6
JIT	14	13	1
Lean	15	14	1
CAD	16	4	12
Control charts	17	19	-2
Costs of quality	18	24	-6
Contingency theory	19	25	-6
Computer-aided testing (CAT)	20	15	5
Prototyping	21	9	12
Single sourcing	21	27	-6
ISO 9000	22	6	16
Computer aided inspection	23	21	2
Quality assurance through design	23	29	-6
Six sigma	24	30	-6
Deming	25	33	-8
PERT	26	28	-2
Design for manufacture	26	22	4
Quality circles	27	26	1
7 basic tools	28	26	2

Reliability indexes	29	32	-3
PDCA	30	23	7
Gage R&R	31	25	6
Robust design	32	26	6
DMAIC	32	31	1

Note: *Kruskal Wallis statistic (K) = 6.12; df =1; p< 0.025.

Table 3 shows relative rankings of the means of the different tools for supply chain and quality managers. While the means for the supply chain managers tend to be higher than the operations managers', the relative rankings of importance for the two groups are instructive.

5. Conclusion:

This paper represents another step in the process of understanding and more clearly defining of the field of supply chain quality management. Performing the Kruskal Wallis analysis, we found support for the hypothesis that operations and supply chain managers do approach quality management from differing perspectives. In the following paragraphs, we will discuss these differences.

Figure 1 provides a summary of the differences and similarities for quality tool adoption between operations and supply chain managers. We developed this list by identifying tools that were in the top 10 for both operations and supply chain managers. The tools and approaches that scored highly for both supply chain and operations managers were on the job training, data analysis, supply chain management, project management and surveys. All of these approaches are widely applicable and are useful for managers and individuals who work in the day to day operations and supply chain worlds.

To identify tools that were emphasized more by supply chain managers than operations managers, we identified tools that had a difference score less than or equal to -9. These tools and approaches included leadership, benchmarking, complaint resolution, supplier development, change management, ERP, focused factory, awards, design for the environment, six sigma, and Deming.

On the other hand, operations managers emphasized QFD, CAD, CAT, prototyping, ISO 9000, DFM, PDCA, and Gage R&R to a greater extent than supply chain managers. These are tools where the difference score for ranking was greater than or equal to 9. Reflection on the identified differences reveals that operations managers tend to manage supply chain relationship through procedural methods such as ISO 9000 and supplier evaluation. Supply chain managers tend to adopt more collaborative approaches such as supplier development, awards, and complaint resolution processes. As the field of operations moves more in a supply chain direction, this could change. Supply chain professionals have long emphasized collaboration and this has become part of the supply chain culture.

High Importance tools for both Supply chain and Operation Managers	**Primarily Important tools for Supply chain Mangers**	**Primarily Important tools for Operation Mangers**	**Low Importance tools for both Supply chain and Operation Managers**
• On the job training • Data Analysis • Supply Chain Management • Customer Relationship Management • Project Management	• Leadership • Benchmarking • Complaint resolution • Supplier development • Change Management • ERP • JIT • Cost of Quality • Six Sigma • Deming • Supplier Evaluation	• QFD • Lean • CAD • Computer Aided Testing(CAT) • Prototyping • ISO 9000 • PERT • Quality Circles • Design for manufacture • PDCA • Gage R & R	• DMAIC • Robust Design • Human Resource management • Contingency theory • Design teams • Robust design

Figure 1. FINDINGS OF THE STUDY

Another difference between supply chain and operations managers is in the area of design. Excepting the environment, operations managers tend to emphasize product design to a much greater extent than supply chain managers. While the data does not reveal the reasons for this, this could be an interesting area for further study. The tools and approaches that were ranked low by both types of managers were DMAIC, Quality Circle, 7 Basic tools, JIT, Lean and SERVQUAL. These were tools and approaches that were ranked in the bottom 10 by both types of managers. There are a few surprises. While some of these approaches are somewhat limited in application, the low rankings for the six sigma methodologies were somewhat surprising. This could reflect the age of the Aldridge award process and the lack of general application in a wide variety of organizations. The low ranking for six sigma processes was more startling. While the data does not explain why the low rankings occurred, it could be that DMAIC and DMADV are more the domain of six sigma black belts. Since these black belts tend to be more specialized, operations and supply chain managers may not utilize these processes in daily problem solving and decision making. The findings from this research are instructive in helping to understand the domain of supply chain quality. From an academic perspective, we consider these results to be another step in defining SCQM by identifying the approaches and methods that are emphasized by managers in their attempt to improve the quality of products and services produced. As a relatively new field of study, more research is needed to create an operational definition for SCQM with a similar level of detail as exists in the operations related quality literature.

From a practitioner perspective, operations and supply managers would benefit from knowing what approaches and methods their counterparts are emphasizing to determine what, if any, internal collaboration should be attempted.

As noted above, internal alignment has been shown to be an antecedent to successful external alignment and improved supply chain performance. From a pedagogical perspective, those who teach supply chain quality management will now better understand what to emphasize so that supply chain students can be well prepared for the work they will be performing. Instead of focusing on more specialized approaches, such as six sigma, maybe students need more preparation in training methods, data analysis, developing relationships with customers, and so forth.

Like all research, there are limitations in our study. The primary limitation of this research was the size and regional nature of the data collection sample. Future studies should be larger in number and involve greater geographical areas. Furthermore, since cultural differences are expected to be reflected in practices, future research is needed to explore quality approaches and methods in various cultures. Research of this nature would also provide a basis for international comparative studies of quality practices. The other major limitation is temporal. This data reflects a single snapshot of practice. We suspect that tool adoption is evolutionary and that longitudinal studies may reveal changing patterns of tool adoption.

References

- AIAG, 2008. Potential failure mode and effects analysis. Southfield, MI: Chrysler, Ford, and General Motors.
- Bessant, J., 1990. Managing advanced manufacturing technology – the challenge of the fifth wave. Oxford, UK: Basil Blackwell.
- Bevan, J., 1987. What is co-maker ship? International Journal of Quality and Reliability Management,4 (3), 47–57.
- Canas, K. and Sondak, H., 2008. Opportunities and challenges of workplace diversity. Upper Saddle River, NJ: Prentice Hall.
- Cardy, R., Gove, S., and DeMatteo, J., 2000. Dynamic and customer-oriented workplaces: implications for HRM practice and research. Journal of Quality Management, 5 (2), 159–186.
- Carter, J. and Narasimhan, R., 1994. The role of purchasing and materials management in total quality management and customer satisfaction. Journal of Supply Chain Management, 30 (3), 2–13.
- Choi, T. and Hartley, J., 1996. An exploration of supplier selection practices across the supply chain. Journal of Operations Management, 14 (4), 333–343.
- Choi, T. and Eboch, K., 1998. The TQM paradox: relations among TQM practices, plant performance, and customer satisfaction. Journal of Operations Management, 17 (1), 59–75.

- Cox, T. and Blake, S., 1991. Managing cultural diversity: implications for organizational competitiveness. Academy of Management Executive, 5 (3), 45–56.
- Davis, T., 1993. Effective supply chain management. Sloan Management Review, 34 (4), 35–46.
- Dickson, G., 1966. An analysis of supplier selection systems and decisions. Journal of Purchasing, 2 (1), 5–17.
- Flynn, B.B., Schroeder, R.G., and Sakaibara, S., 1994. A framework for quality research and an associated measurement instrument. Journal of Operations Management, 11 (4), 339–366.
- Flynn, B. and Flynn, E., 2005. Synergies between supply chain management and quality management: emerging implications. International Journal of Production Research, 43 (16), 3421–3436.
- Foster, S.T., Sampson, S.E., and Dunn, S., 2000. The impact of customer contact on environmental initiatives for service firms. International Journal of Operations and Production Management, 20 (2), 187–203.
- Foster, S.T., 2008. Towards an understanding of supply chain quality management. Journal of Operations Management, 26, (4), 461–467.
- Foster, S.T. and Ogden, J., 2008. On difference in how operations and supply chain managers approach quality management. International Journal of Production Research, 46 (24), 6945–6963.
- Foster, S.T., 2010. Managing quality: integrating the supply chain. Upper Saddle River, NJ: Prentice Hall.
- Gustin, C.M., 2001. Supply chain integration: reality or myth? Distribution Business Management Journal, 1 (1), 71–74.
- Hendricks, K.B. and Singhal, V.R., 2001. The long-run stock price performance of firms with effective TQM programs as provided by quality award winners. Management Science, 47 (3), 359–368.
- Kaynak, H. and Hartley, J., 2008. A replication and extension of quality management into the supply chain. Journal of Operations Management, 26 (4), 468–489.

- Kuei, C., Madu, C., and Lin, C., 2001. The relationship between supply chain quality management practices and organizational performance. International Journal of Quality and Reliability, 18 (8–9), 864–873.
- Lee, S. and Ansari, A., 1985. Comparative analysis of Japanese just-in-time purchasing and traditional US purchasing systems. International Journal of Operations and Production Management, 5 (4), 5–14.
- Linderman, K., 2008. Six sigma: definition and underlying theory. Journal of Operations Management, 26 (4), 536–554.
- Miller, C.R., 2002. Competing though supply chains: the rise of integrated supply chain management. Journal of the Reliability Analysis Center, 10 (3), 1–4.
- Narasimhan, R. and Das, A., 2001. The impact of purchasing integration and practices on manufacturing performance. Journal of Operations Management, 19 (5), 593–609.
- Pagell, M., 2004. Understanding the factors that enable and inhibit the integration of operations, purchasing and logistics. Journal of Operations Management, 22 (5), 459–487.
- Robinson, C. and Malhotra, M., 2005. Defining the concept of supply chain quality management and its relevance to academic and industrial practice. International Journal of Production Economics, 96 (3), 315–325.
- Sroufe, R. and Curkovic, S., 2008. An examination of ISO 9000: 2000 and supply chain quality assurance. Journal of Operations Management, 26 (4), 503–520.
- Theodorakioglu, Y., Gotzamani, K., and Tsiolvas, G., 2006. Supplier management and its relationship to buyers' quality management. Supply Chain Management, 11 (2), 148–159.
- Trent, R. and Moncza, R., 1999. Achieving world-class supplier quality. Total Quality Management, 10 (6), 927–939.
- Witcher, B. and Butterworth, R., 1999. Hoshin kanri: how Xerox manages. Long Range Planning, 32 (3), 323–332.