# Consistency of strategic and tactical benchmarking performance measures

## A perspective on managerial positions and organizational size

Received 30 July 2013
Revised 16 November 2013
Accepted 3 December 2013

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**Abstract**

**Purpose** – The purpose of this paper is to examine the consistency of benchmarking performance measures and to investigate the impact of organizational size and managerial positions on the deployment of strategic and tactical benchmarking performance measures.

**Design/methodology/approach** – A set of eight hypotheses was used to examine the consistency of the benchmarking performance measures and the impact of organizational size and managerial positions on selection of strategic and tactical benchmarking performance measures. A questionnaire-based survey data were used to test the hypotheses. The target population was manufacturing firms in Midwestern USA; the sample covers organizations in a variety of industries. Out of 91 completed surveys received, 84 surveys were usable resulting in a response rate of 17 percent.

**Findings** – The paper found evidence of misalignment between organizational goals and objectives and proactive development of organizational core capabilities. The result also indicates that managers with high-level positions as well as managers from large organizations placed higher emphasis on strategic benchmarking performance measures.

**Research limitations/implications** – Research is general and not industry specific.

**Practical implications** – Effective performance measurement is a critical element of organizational success. It requires a thorough understanding of organizational strategy and deployment of the strategy into consistent sub-strategies.

**Originality/value** – For effective benchmarking, managers must develop a complete understanding of their own business strategy and choose long-term and short-term benchmarking performance measures that are consistent with organizational strategy.

**Keywords** Performance measurement, Benchmarking

**Paper type** Research paper

## 1. Introduction

For the past three decades, world-class organizations have utilized benchmarking to improve aspects of their competitive advantages such as cost, quality, delivery, and customer service. Benchmarking activities may be defined as the process of learning from the best-in-class organizations, determining how the best-in-class achieve their performance levels, and utilizing the best practices to their own organization to achieve superior performance (Watson, 1992, 1993; Whiting, 1991). Benchmarking is an effective means for learning and change because it exposes employees to new approaches, systems, and procedures (Kuebler, 1993). It is a flexible tool that can be used for gradual continuous improvement, as well as for major changes of process reengineering (Bogan and English, 1994). Deming (1982) and a number of other quality advocates have strongly recommended the use of benchmarking as an essential component of continuous improvement (Paulo *et al.*, 2012; Venetucci,

Benchmarking: An International Journal
Vol. 22 No. 6, 2015
pp. 1019-1032

1463-5771
DOI 10.1108/BIJ-07-2013-0074

1992; Dawkins *et al.*, 2007; Blanchard, 2008). Since 1987, benchmarking has been a major component of the Malcolm Baldrige National Quality Award criteria. More recently, the practice of benchmarking is being widely used for six sigma process and for organizations seeking ISO 9000 series certification (Kafetzopoulos *et al.*, 2013).

Although since mid-1980s there has been considerable volume of research on the application of benchmarking in various areas of business, but the focus of the research has been primarily on short-term technical and financial aspects of departmental benchmarking metrics (Meybodi, 2005; Talluri and Vazacopoulos, 1998). Whether short-term technical and financial metrics utilized by mangers at the departmental levels was aligned with long-term organizational strategy was generally disregarded. As a result, benchmarking performance measures have often been inconsistent with organizational strategy (Goldwasser, 1995; Kaplan and Norton, 1992). As elaborated by a number of researchers effective benchmarking is more than comparative analysis of quantitative measures from one company to another. To take full advantage of benchmarking, benchmarking activities need to be integrated into organizational strategy and the process employs a broad range of performance measures that are consistent with organizational strategy (Furey, 1987; Goldwasser, 1995; Kaplan and Norton, 1992; Talluri and Vazacopoulos, 1998; Meybodi, 2010).

Although in the context of benchmarking, but the focus of this paper is not on the process of benchmarking. Rather, the objective of the paper is to examine the alignment of whether benchmarking performance measures are aligned with organizational strategy. Specifically, the objectives of this paper are:

(1) to examine whether organizational goals and objectives are consistent with external environmental factors and their core competencies;

(2) to investigate top down bottom up consistency of benchmarking performance measures at various organizational levels;

(3) to study the impact of managerial positions on the deployment of strategic and tactical benchmarking performance measures; and

(4) to study the impact of organizational size on the deployment of strategic and tactical benchmarking performance measures.

## 2. Literature review

The use of benchmarking as an effective quality improvement tool was started by Xerox in the early 1980s to overcome severe international competition problems. Since then, application of benchmarking in diverse areas such as manufacturing, health care, marketing, supply chain, energy, investment decisions, hotel business, public transportation, and customer service has been reported (Zairi and Whymark, 2000; Raymond, 2008; Newman *et al.*, 1995; Meybodi, 2010; Smith,1997; Goncharuk, 2011; Nassar, 2012; Hambly, 1997; Roth *et al.*, 1997; Olli-Pekka Hilmola, 2011; Liang, 2009; Routroy and Pradhan, 2013). The use of benchmarking as an effective organizational learning tool has been presented by Ford and Evans (2001), Watson (2001), O'Dell and Grayson (2000), Evans and Dean (2003), Brue (2002).

As stated earlier, although the content of the articles is diverse, their primarily focus, however, has been on short-term financial metrics to evaluate the performance of the organization. These studies have generally produced limited results. Recently, managers in a broad range of industries have recognized that new global competitive realities

require that financial metrics to be treated as one among a broader set of performance measures (Meybodi, 2010). Notable recent benchmarking research utilizing multiple performance measures include: Bartley *et al.* (2007) utilized customer service as benchmarking metrics to provide insights into how organizations can develop more customer-focussed culture. Seong-Jong *et al.* (2009) used multiple benchmarking performance measures to evaluate the performance of a number of specialty coffee stores. Singh *et al.* (2006) utilized benchmarking to investigate supply chain management practices at a number of Indian manufacturing organizations. They found that Indian organizations were using benchmarking mainly as a continuous improvement tool. Gurumurthy and Kodali (2009) utilized benchmarking with multiple performance measures to assess the implementation of lean manufacturing. Yasir and Sandhu (2013) developed a benchmarking framework to better understand the role of trust in the performance of strategic alliances. Kafetzopoulos *et al.* (2013) showed a positive relationship between effective performance measurement and competitive advantage of the organizations in food industry. Lau (2011) used benchmarking to develop a green logistics performance index for performance comparison among industries. Chia *et al.* (2009) also employed a balanced scorecard approach to measure the performance of a number of entities in the supply chain. The authors concluded despite the need to utilize a balanced performance measurement, organizations often focussed on the use of traditional financial measures. Salah *et al.* (2013) utilized balanced quantitative and qualitative measures to estimate the performance of information technologies in delivering valuable e-government services.

Practical application of lead benchmarking and performance measurement to achieve organizational change has been investigated by Moffett *et al.* (2008). Goncharuk (2011) investigated the capability of using performance benchmarking tools for estimation of efficiency in gas distribution companies. The use of benchmarking to measure operational performance of organization utilizing internet-based services has been reported by Hadaya (2009). Gleich *et al.* (2008) addressed lack of appropriate performance measures and benchmarks for recording activity and sub-process-related cost in the literature. The critical role of effective performance measurement in the success of the organization is examined next.

## 3. Benchmarking and performance measurements

Total quality management (TQM), just-in-time and lean systems, Six Sigma, and a number of other important events during the last three decades have awakened organizations to recognize the importance of performance measurements in managing complex processes. Managers across various industries have recognized the importance of managing processes and the truth that what gets measured is what gets managed and improved. Without effective performance measurement a company does not know the real problem, who is responsible, where improvement efforts are needed, and the amount and type of necessary resources. Top down bottom up consistency of performance measures with organizational goals and objective, organizational competitive priorities, and their competitive capabilities are among characteristics of effective performance measurements (Dewan *et al.*, 2013). This requires that performance measurements to have a broad range of balanced mix of short-term financial and long-term strategic factors. Special focus of Malcolm Baldrige National Quality Award and ISO 9000 series on benchmarking and performance measurements is a clear indication of the critical role of these elements in managing and improving organizational processes (Kafetzopoulos *et al.*, 2013).

In the past, organizations generally used performance measurements that contributed mainly to short-term technical and financial results. How the organization achieved those results and their impact on the entire organization was unimportant (Goncharuk, 2008; Eccles and Nohria, 1992). Today, managers understand that focus on short-term financial and technical results without consideration to overall organizational strategy could produce devastating results over the long term. As a result, organizations are learning to manage the system in a totally new way. In this new horizontally integrated system, organizations accept a long-term perspective and utilize a balanced financial and nonfinancial performance measures to carefully improve the competitiveness of the entire organization. The approach requires that organizations develop a complete understanding of their own business strategy and deployment of the strategy into sub-strategies. This process will ensure that there is a consensus among managers at various levels that long-term and short-term performance measures that are consistent with organizational goals and objectives (Day, 1992; Papke-Shields *et al.*, 2002; Madigan, 1993).

With respect to the critical importance of the alignment between benchmarking performance measures made by mangers at various levels and overall organizational strategy, the paper presents the following hypotheses:

*H1*. Organizations are consistent in scanning external environmental factors to set their goals and objectives.

*H2*. Organizational goals and objectives are consistent with their core competencies.

*H3*. Organizational competitive priorities are consistent with their goals and objectives.

*H4*. Organizational core capabilities are consistent with their competitive priorities.

*H5*. Managerial positions and the rating of the strategic factors are related.

*H6*. Managerial positions and the rating of the tactical factors are related.

*H7*. Organizational size and the rating of the strategic factors are related.

*H8*. Organizational size and the rating of the tactical factors are related.

*H1* through *H8* are aggregate hypotheses. Each factor in Tables I-V represents individual test of hypothesis.

## 4. Methodology and data collection

A questionnaire-based survey was used to test the above hypotheses. The part of the survey related to this paper contained a series of questions on the use of strategic and

| Factor | Mean | SD |
|---|---|---|
| Build market share | 4.76* | 1.27 |
| Maximize profit | 4.61* | 1.32 |
| Focus on customer satisfaction | 4.52* | 1.15 |
| Build and exploit core competencies | 3.74 | 1.39 |
| Understand competitors' strategy | 4.14 | 1.21 |
| Understand global strategies | 3.88 | 1.37 |
| Understand technology | 3.91 | 1.32 |

**Notes:** 1 = Low importance, 5 = high importance. SD, Standard deviation. *Statistically larger than the other means at $\alpha = 0.05$

**Table I.**
Importance ratings and standard deviation for the corporate goals and objectives

| Factor | Importance Mean | Importance SD | Strength Mean | Strength SD | $p$-Value* |
|---|---|---|---|---|---|
| Product reliability | 4.69 | 1.16 | 3.56 | 1.24 | 0.000* |
| Conformance quality | 4.58 | 1.28 | 3.84 | 1.14 | 0.005* |
| Delivery reliability | 4.47 | 1.24 | 3.78 | 1.32 | 0.005* |
| Product customization | 4.35 | 1.36 | 3.42 | 1.09 | 0.000* |
| NPD speed | 4.29 | 1.23 | 3.35 | 1.36 | 0.000* |
| Price | 4.16 | 1.34 | 3.96 | 1.25 | 0.230 |
| Fast delivery | 4.03 | 1.32 | 3.82 | 1.19 | 0.210 |
| Performance quality | 3.98 | 1.22 | 4.22 | 1.28 | 0.190 |
| Service after sales | 3.84 | 1.44 | 4.18 | 1.23 | 0.100 |
| Volume flexibility | 3.62 | 1.31 | 4.32 | 1.37 | 0.100 |

**Notes:** 1 = Low importance, 5 = high importance; 1 = weak strength, 5 = strong strength. *Statistically significant at $\alpha = 0.05$

**Table II.**
Importance and strength ratings for competitive priorities

| Strategic factors | Tactical factors |
|---|---|
| Develop goals and objectives (DGO) | Reduce percent defects (RPD) |
| Develop core competencies (DCC) | Reduce percent errors (RPE) |
| Understand competitors' strategies (UCS) | Reduce labor costs (RLC) |
| Develop global strategies (DGS) | Reduce materials costs (RMC) |
| Develop technology strategies (DTS) | Reduce overhead costs (ROC) |
| Focus on customer satisfaction (FCS) | Reduce inventory costs (RIC) |
| Adopt TQM philosophy and practices (TQM) | Reduce set-up/changeover costs (RSUC) |
| Change organizational culture (COC) | Increase labor utilization (ILU) |
| Improve inter-functional communication (IIFC) | Increase equipment utilization (IEU) |
| Improve employee training (IET) | Improve process capability (IPC) |
| Improve employee empowerment (IEE) | Improve quality circle practices (IQCP) |
| Improve employee team work (IETW) | Utilize quality improvement tools (UQIT) |
| Install continuous improvement (ICI) | Utilize statistical process control charts (USPC) |
| Adopt quality at the source (AQS) | Increase delivery speed (IDS) |
| Improve supply chain management (ISCM) | Increase product development speed (IPDS) |
| Improve supplier relationships (ISR) | Reduce manufacturing lead time (RMLT) |
| Eliminate wastes (ELW) | Increase delivery reliability (IDR) |
| Reengineer new product development (RNPD) | Increase new product customization (INPC) |

**Table III.**
Strategic and tactical benchmarking performance measurement factors

tactical performance measurement factors. The focus of strategic factors are on setting organizational goals and objectives, developing core competencies, formulating organizational competitive priorities as well as understanding external environmental factors such as the state of competition, technology, and globalization. Tactical items are related to specific technical and/or financial performance measures such as cost, quality, cycle time, and delivery.

The target population for this study consisted of manufacturing firms in the Midwestern USA. A sample of 500 manufacturing firms with more than 50 employees was chosen from manufacturers' directories of the states of Illinois, Indiana, Ohio, Michigan, and Wisconsin. The sample covers organizations in a variety of industries ranging from fabricated metal, communication, electronics, automotive, tools, chemicals, and rubber. A survey instrument based on examination of the literature and factors listed

| | Managerial position | | | | | Organizational size | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | High | | Low | | | Large | | Small | | |
| Factor | Mean | SD | Mean | SD | *p*-Value | Mean | SD | Mean | SD | *p*-Value |
| DGO | 4.63 | 1.92 | 3.56 | 2.11 | 0.004* | 4.72 | 1.71 | 3.79 | 1.82 | 0.005* |
| DCC | 4.32 | 1.83 | 3.24 | 1.74 | 0.005* | 4.46 | 1.64 | 3.57 | 1.57 | 0.005* |
| UCS | 4.65 | 1.76 | 3.76 | 1.85 | 0.040** | 4.68 | 1.54 | 3.76 | 1.63 | 0.004* |
| DGS | 4.51 | 1.85 | 3.52 | 1.63 | 0.006* | 4.73 | 1.82 | 3.42 | 1.78 | 0.005* |
| DTS | 4.49 | 1.68 | 3.46 | 1.75 | 0.005* | 4.63 | 1.76 | 3.75 | 1.64 | 0.006* |
| FCS | 4.72 | 1.64 | 4.53 | 1.67 | 0.1210 | 4.78 | 1.84 | 4.53 | 1.62 | 0.1220 |
| TQM | 4.62 | 1.55 | 3.66 | 1.64 | 0.005* | 4.65 | 1.63 | 3.84 | 1.72 | 0.040** |
| COC | 4.32 | 1.87 | 3.34 | 1.62 | 0.008* | 4.52 | 1.92 | 3.57 | 1.86 | 0.034** |
| IIFC | 4.56 | 1.48 | 3.82 | 1.63 | 0.004* | 4.37 | 1.61 | 3.43 | 1.67 | 0.005* |
| IET | 3.92 | 1.66 | 4.20 | 1.47 | 0.1100 | 4.68 | 1.78 | 4.32 | 1.75 | 0.1320 |
| IEE | 3.75 | 1.45 | 4.14 | 1.69 | 0.123 | 4.31 | 1.76 | 4.12 | 1.86 | 0.1240 |
| IETW | 4.51 | 1.62 | 3.78 | 1.85 | 0.042** | 4.71 | 1.64 | 3.78 | 1.94 | 0.005* |
| ICI | 4.57 | 1.34 | 4.43 | 1.95 | 0.1370 | 4.76 | 1.68 | 4.25 | 1.61 | 0.1350 |
| AQS | 4.34 | 1.40 | 4.53 | 1.68 | 0.1250 | 4.58 | 1.53 | 4.24 | 1.69 | 0.1470 |
| ISCM | 4.47 | 1.87 | 3.67 | 1.48 | 0.033** | 4.64 | 1.92 | 3.56 | 1.97 | 0.004* |
| ISR | 4.56 | 1.64 | 3.76 | 1.73 | 0.005* | 4.52 | 1.86 | 3.62 | 1.73 | 0.042** |
| ELW | 4.58 | 1.67 | 3.55 | 1.57 | 0.005* | 4.71 | 1.78 | 3.76 | 1.68 | 0.005* |
| RNPD | 4.46 | 1.66 | 3.53 | 1.52 | 0.005* | 4.66 | 1.93 | 3.76 | 1.76 | 0.035** |

**Table IV.**
Importance ratings for strategic benchmarking performance measurement factors

**Notes:** 1 = Low importance, 5 = high importance. SD, Standard deviation. *,**Significant at 0.01 and 0.05, respectively

| | Managerial position | | | | | Organizational size | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | High | | Low | | | Large | | Small | | |
| Factor | Mean | SD | Mean | SD | *p*-Value | Mean | SD | Mean | SD | *p*-Value |
| RPD | 4.02 | 1.83 | 4.73 | 1.87 | 0.033** | 4.63 | 1.83 | 4.71 | 1.77 | 0.1230 |
| RPE | 4.07 | 1.65 | 4.75 | 1.86 | 0.042** | 4.57 | 1.53 | 4.73 | 1.64 | 0.1410 |
| RLC | 3.65 | 1.92 | 4.63 | 1.72 | 0.005* | 3.87 | 1.68 | 4.69 | 1.59 | 0.043** |
| RMC | 3.54 | 1.82 | 4.58 | 1.69 | 0.004* | 3.83 | 1.79 | 4.75 | 1.47 | 0.003* |
| ROC | 4.22 | 1.75 | 4.71 | 1.58 | 0.1420 | 4.42 | 1.67 | 4.68 | 1.69 | 0.1450 |
| RIC | 4.13 | 1.62 | 4.75 | 1.69 | 0.045** | 4.08 | 1.87 | 4.77 | 1.68 | 0.032** |
| RSUC | 4.52 | 1.73 | 4.69 | 1.67 | 0.1250 | 4.67 | 1.59 | 4.45 | 1.82 | 0.1520 |
| ILU | 4.64 | 1.48 | 4.42 | 1.83 | 0.1360 | 3.72 | 1.73 | 4.67 | 1.66 | 0.002* |
| IEU | 3.83 | 1.67 | 4.68 | 1.76 | 0.043** | 3.37 | 1.84 | 4.46 | 1.91 | 0.003* |
| IPC | 4.13 | 1.59 | 4.76 | 1.55 | 0.045** | 4.63 | 1.88 | 4.57 | 1.78 | 0.1530 |
| IQCP | 3.63 | 1.78 | 4.71 | 1.58 | 0.004* | 4.11 | 1.63 | 4.74 | 1.74 | 0.045** |
| UQIT | 4.05 | 1.59 | 4.73 | 1.93 | 0.046** | 4.33 | 1.77 | 4.79 | 1.85 | 0.1230 |
| USPC | 4.08 | 1.73 | 4.78 | 1.61 | 0.034** | 4.36 | 1.57 | 4.75 | 1.82 | 0.1420 |
| IDS | 4.22 | 1.68 | 4.37 | 1.72 | 0.1460 | 4.78 | 1.86 | 4.13 | 1.77 | 0.042** |
| IPDS | 4.23 | 1.71 | 4.38 | 1.57 | 0.1270 | 4.75 | 1.83 | 3.36 | 1.68 | 0.034** |
| RMLT | 4.04 | 1.84 | 4.78 | 1.73 | 0.041** | 4.62 | 1.74 | 3.53 | 1.79 | 0.004* |
| IDR | 4.66 | 1.42 | 4.14 | 1.76 | 0.1270 | 4.77 | 1.85 | 3.78 | 1.57 | 0.003* |
| INPC | 4.55 | 1.72 | 3.62 | 1.81 | 0.005* | 4.68 | 1.88 | 3.76 | 1.67 | 0.046** |

**Table V.**
Importance ratings for tactical benchmarking performance measurement factors

**Notes:** 1 = Low importance, 5 = high importance. SD, Standard deviation. *,**Significant at 0.01 and 0.05, respectively

in Tables I-III was developed. A panel of practitioners and researchers with experience in setting organizational strategy and Cronbach's $\alpha$ reliability test ($\alpha = 0.72$) were used to validate the survey instrument.

In addition to general organization and managerial profile items, the survey contained a series of questions regarding strategic as well as tactical factors. Out of 91 completed surveys received, 84 surveys were usable, resulting in a response rate of 17 percent. The survey data indicates the majority of respondents had various managerial positions from organizations with less than 500 employees. Presidents and vice presidents accounted for 29 percent and plant managers accounted for 30 percent of the sample. About 35 percent of the sample had other managerial positions such as operations/production managers, quality managers, and the remaining 6 percent were production line supervisors. In terms of manufacturing experience, about 28 percent of the respondents had between ten and 20 years and 60 percent had more than 20 years of manufacturing experience. The statistical results presented in Tables I-V are based on analysis of variance and two-sample *t*-tests.

## 5. Results

Table I shows the ranking of the mean importance score for each element of corporate goals and objectives. The respondents were asked to rate each element of Table I based on the degree of importance (1 = low importance, 5 = high importance) to their company for the next five years. Summary data indicates that the respondents' top three corporate goals and objectives are building market share, maximizing profits, and focussing on customer satisfaction. Being in a better competitive position with respect to quality and customer satisfaction is possible explanation for market expansion and profit making posture. However, the mean ratings for the last four factors of building core competencies, and understanding competition, globalization, and technology are significantly lower than the mean ratings of the first three factors. The factors marked with an asterisk in Table I indicate these factors are statistically larger than the factors with no asterisk marks at a 0.05 level of significance. This is perhaps an indication of conventional reactive strategy in which the primary focus of managers is on marketing and financial goals. Understanding external environmental factors such as competition, global issues, technology, and development of organizational core competencies to effectively deal with these factors are considered to be secondary. This is a disturbing posture because in today's global market world-class organizations focus more on understanding environmental factors and building their core competencies than on achieving marketing and financial goals. In fact, world-class organizations develop core competencies first, then utilize a proactive strategy and look for opportunities to exploit their core competencies to achieve a competitive advantage. Understanding the causes for such strategic misalignment between organizational goals and objectives and proactive development of their core competencies is extremely important. From preceding discussion as well as statistical results of Table I, it is clear that *H1* and *H2* are not supported by the data.

Table II shows the ranking of the mean importance score for each element of competitive priorities. Similar to Table I, the respondents were asked to rate each element of Table II based on the degree of importance (1 = low importance, 5 = high importance) to their company for the next five years. From Table II, the respondents ranked product reliability, conformance quality, delivery reliability, product customization, and new product development speed as the top five important competitive priorities. The ranking of product reliability and conformance quality as the top two competitive priorities is

consistent with corporate goals and objectives. It indicates that managers believe that quality factors are still important elements of competitive advantage. However, the ranking of delivery reliability, product customization, and new product development speed as the next three competitive priorities indicate that the respondents also believe on the importance of time-based competition and product customization. Table II also shows that price as an element of competitive priorities ranked sixth. This rather interesting result indicates, unlike conventional thinking, the responding managers believe that low price is no longer the primary elements of competitive advantage. Relative low ranking of price along with the last four competitive priorities is perhaps an indication that these elements represent order qualifiers and the top five factors represent order winners. In other words, competitive market considers the last five competitive priorities as given. To attract customers, organizations need to perform on the basis of the top five competitive priority factors. Overall, one can argue that the importance ranking of top five competitive priorities is consistent with organizational strategy of market expansion, profitability, and customer satisfaction and hence *H3* is supported by the data.

To understand relative strength of organizational core competencies, for each element of competitive priorities the respondents were asked to rate relative competitive strength of their organization with respect to the competitors who are doing best in that area. A five-point scale, where 1 corresponds to weak and 5 corresponds to strong, is used to indicate managers' perceptions of the company's current competitive strength relative to the best competitors. The mean strength scores for each element of competitive priorities are shown in Table II. Statistical tests indicate that, for the top five competitive priorities, the mean strength is significantly lower than the mean importance. This is evident because the *p*-value for these competitive priority factors is less than 0.005. This indicates, although managers ranked product reliability, conformance quality, delivery reliability, product customization, and new product development speed as the top-five important competitive priorities, organizational strength for these factors, however, is not that strong. On the other hand, the mean strength for the last-three competitive priorities is larger than the mean importance indicating that managers believe their competitive capabilities in the areas of performance quality, service after the sales, and volume flexibility are quite strong. This imbalance between importance and strength for the top-five competitive priorities is perhaps a critical area that needs to be investigated. Overall, *H4* is not supported by the data.

Table III shows the listing of the strategic and tactical benchmarking performance measurement factors (Miller *et al.*, 1992; Bogan and English, 1994). Tables IV-V list respectively the importance score for strategic and tactical benchmarking performance measurement factors. Each table shows the mean and the standard deviation of importance ratings for two managerial positions and two organizational sizes. In Tables IV-V, the responses from the presidents, vice presidents, and plant managers are grouped under high-managerial positions and the responses from operations/production managers, quality managers, and supervisors are grouped under low-managerial positions. Also, organizations with more than 100 employees are grouped under large and those with less than 100 employees are grouped under small organizations.

The respondents were asked to rate each factor based on the degree to which they believe the factors are important (1 = low importance, 5 = high importance) to be used for benchmarking performance measurements. The left portion of Table IV indicates that overall managers with high-level positions rated strategic factors significantly higher than the managers with low-level positions. This is evident because, with the exception of two factors, the mean ratings for these factors are above 4.00.

Also, statistical tests indicate that out of 18 tests, 13 were statistically significant at least at 0.05 levels. For the strategic factors such as customer satisfaction, employee training, employee empowerment, continuous improvement, and quality at the source, the mean ratings for high-level managers were not significantly different than the ratings for the low-level managers. Perhaps one possible explanation for such result would be the popularity of these factors. Since these are well-known TQM factors, managers at both levels believe on the importance of these strategic benchmarking factors. It is interesting to note that managers with low-level positions rated the strategic factors employee training, employee empowerment, and quality at the source higher than the managers with high-level positions. This result was expected because low-level managers are closer to the employee-related issues than high-level managers. The right side of Table IV shows that overall managers from large organizations rated strategic factors higher than the managers of small organizations. This is evident because, for large organizations, the mean rating for all strategic factors is above 4.00. Also, statistical tests indicate that out of 18 tests, 13 were statistically significant; meaning managers of large organizations rated these strategic factors significantly higher than the managers of small organizations. However, for the strategic factors customer satisfaction, employee training, employee empowerment, continuous improvement, and quality at the source the mean ratings for the large organizations were not significantly different than the mean ratings for small organizations. As explained earlier, since these are popular TQM factors, managers of both large and small organizations believe on the importance of these strategic factors.

Table V shows, unlike strategic factors, overall managers with low-level positions rated tactical factors higher than the managers with high-level positions. With the exception of one factor, the mean ratings for low-level managers are above 4.00. Also, statistical tests indicate that out of 18 tests, 12 were statistically significant at least at a 0.05 level of significance, meaning for tactical factors, low-level managers rated these factors significantly higher than the managers with high-level positions. This result is consistent with manufacturing literature in that low-level managers often have tendencies to focus more on technical cost-cutting and quality improvement measures. This is perhaps due to miscommunication with high-level managers or the result of inconsistent evaluation and reward system for low-level managers. That is, regardless of organizational strategy, low-level managers are often rewarded based on their cost-cutting measures or efficient utilization of resources. The ratings for the tactical factors reducing overhead and set-up costs, increasing delivery speed and delivery reliability, and increasing product development speed for the two managerial levels were not significantly different. Perhaps due to popularity of these factors, managers at both levels believe on the improvement of these tactical benchmarking factors. The right portion of Table V shows the mean ratings of tactical factors for managers of large and small organizations. Statistical tests indicate that for 11 tests, there were significant differences between the mean ratings of managers from large organizations and the mean ratings of managers from small organizations. Specifically, for tactical factors such as reducing labor, materials, and inventory costs, as well as increasing labor and equipment utilizations, managers from small organizations rated significantly higher than the managers from large organizations. This result is not really surprising because smaller organizations typically place more emphasis on cost reduction measures and better utilization of labor and equipment. On the other hand, for tactical factors such as improving quality circle practices, increasing delivery and new product development speeds, reducing manufacturing lead time, increasing

delivery reliability, and increasing new product customization, managers from large organizations rated these factors significantly higher than the managers from small organizations. Perhaps due to availability of more resources, larger organizations focus more on global quality, delivery, and customization issues than the smaller organizations. For tactical factors such as reducing defects and errors, increasing process capability, utilization of quality improvement tools, and utilization of statistical process charts the mean ratings for large organizations were not significantly different than the mean ratings for small organizations. Again, since these are popular TQM factors, perhaps managers of both large and small organizations believe on the importance of these factors. From preceding discussion, we may conclude that overall *H5* through *H8* are supported by the data.

## 6. Conclusion

This paper demonstrates how understanding organizational strategy is crucial to improve the effectiveness of benchmarking performance measures. The paper also investigates the impact of managerial positions and organizational sizes on the deployment of strategic and tactical benchmarking performance measures. A set of eight hypotheses was used to examine the consistency of the decisions and to examine the relationship between managerial positions and organization sizes on the selection of strategic and tactical benchmarking performance measures. Statistical results indicate the following:

- In setting their goals and objectives, organizations are often inconsistent to understand external environmental factors.
- Possible misalignment between organizational goals and objectives and proactive development of their core competencies. Also, inconsistencies between organizational competitive priorities and their core capabilities.
- Overall managers with high-level positions rated strategic factors significantly higher than the managers with low-level positions. Also, managers from large organizations rated strategic factors significantly higher than the managers from small organizations.
- For strategic factors such as customer satisfaction, employee training, employee empowerment, continuous improvement, and quality at the source, the mean ratings for high-level managers were not significantly different than the mean ratings for low-level managers. Since these are well-known TQM factors, perhaps managers at both levels believe on the importance of these strategic benchmarking factors.
- Overall managers with low-level positions rated tactical factors higher than the managers with high-level positions. This result is consistent with manufacturing literature because low-level managers often have tendency to focus more on tactical cost cutting and quality improvement measures.
- For tactical factors such as reducing labor, materials, and inventory costs as well as increasing labor and equipment utilizations managers from small organizations rated these factors significantly higher than the managers from large organizations. This result is consistent with manufacturing literature because smaller organizations typically place more emphasis on cost reduction measures and better utilization of labor and equipment.

- For tactical factors such as reducing defects and errors, increasing process capability, utilization of quality improvement tools, and utilization of statistical process control charts the mean ratings for large and small organizations were not significantly different. Since these are popular TQM factors, perhaps managers of both large and small organizations believe on the importance of these operational factors.
- Managerial implication: the paper showed evidence of misalignment, inconsistencies, and lack of consensus among managers in choosing benchmarking performance measures. To be effective, managers must develop a complete understanding of their own business strategy and choose long-term and short-term benchmarking performance measures that are consistent with organizational strategy.

## References

Bartley, B., Gomibuchi, S. and Mann, R. (2007), "Best practices in achieving a customer-focused", *Benchmarking: An International Journal*, Vol. 14 No. 4, pp. 482-496.

Blanchard, D. (2008), "Portrait of best-in-class quality management", *Industry Week*, November 6.

Bogan, C.E. and English, M.J. (1994), *Benchmarking for Best Practices*, McGraw Hill, New York, NY.

Brue, G. (2002), *Six Sigma for Managers*, McGraw Hill, New York, NY.

Chia, A., Goh, M. and Sin-Hoon, H. (2009), "Performance measurement in supply chain entities: balanced scorecard perspective", *Benchmarking: An International Journal*, Vol. 16 No. 5, pp. 605-620.

Dawkins, P., Feeny, S. and Harris, M.N. (2007), "Benchmarking firm performance", *Benchmarking: An International Journal*, Vol. 15 No. 6, pp. 693-710.

Day, C.R. (1992), "Benchmarking's first law: know thyself!", *Industry Week*, Vol. 241 No. 4, p. 70.

Deming, W.E. (1982), *Quality Productivity and Competitive Position*, MIT Center for Advanced Engineering Study, Cambridge, MA.

Dewan, M.Z.I., Zunder, T.H. and Jorna, R. (2013), "Performance evaluation of an online benchmarking tool for European freight transport chains", *Benchmarking: An International Journal*, Vol. 20 No. 2, pp. 233-250.

Eccles, R.G. and Nohria, N. (1992), *Beyond the Hype: Rediscovering the Essence of Management*, Harvard Business School, Boston, MA.

Evans, J.R. and Dean, J.W. (2003), *Total Quality Management, Organization and Strategy*, 3rd ed., Thomson/Southwestern, Mason, OH.

Ford, M.W. and Evans, J.R. (2001), "Baldrige assessment and organizational learning: the need for change management", *Quality Management Journal*, Vol. 8 No. 3, pp. 9-25.

Furey, T.R. (1987), "Benchmarking: the key to developing competitive advantage in mature markets", *Planning Review*, Vol. 15 No. 1, pp. 30-32.

Gleich, R., Motwani, J. and Wald, A. (2008), "Process benchmarking: a new tool to improve the performance of overhead areas", *Benchmarking: An International Journal*, Vol. 15 No. 3, pp. 242-256.

Goldwasser, C. (1995), "Benchmarking: people make the process", *Management Review*, Vol. 84, June, pp. 39-45.

Goncharuk, A.G. (2008), "Performance benchmarking in gas distribution industry", *Benchmarking: An International Journal*, Vol. 15 No. 5, pp. 548-559.

Goncharuk, A.G. (2011), "Benchmarking for investment decisions: a case of food production", *Benchmarking: An International Journal*, Vol. 18 No. 5, pp. 694-704.

Gurumurthy, A. and Kodali, R. (2009), "Application of benchmarking for assessing the lean manufacturing implementation", *Benchmarking: An International Journal*, Vol. 16 No. 2, pp. 274-308.

Hadaya, P. (2009), "Benchmarking firms' operational performance according to their use of internet-based interorganizational systems", *Benchmarking: An International Journal*, Vol. 16 No. 5, pp. 621-639.

Hambly, L. (1997), "Sun microsystems embeds quality into its DNA", *The Quality Observer*, Vol. 45 No. 1, pp. 16-20.

Kafetzopoulos, D., Gotzamani, K. and Psomas, E. (2013), "Quality systems and competitive performance of food companies", *Benchmarking: An International Journal*, Vol. 20 No. 4, pp. 463-483.

Kaplan, R.S. and Norton, D.P. (1992), "The balance scorecard-measures that drive performance", *Harvard Business Review*, Vol. 70 No. 1, pp. 71-79.

Kuebler, A. (1993), "The quest for excellence 5", *Annual Conference of Baldrige Award Winners, AT&T Universal Card Services Presentation, February*, pp. 15-17.

Lau, K.H. (2011), "Benchmarking green logistics performance with a composite index", *Benchmarking: An International Journal*, Vol. 18 No. 6, pp. 873-896.

Liang, J.C.H. (2009), "An integrated product development process in the automotive industry", *International Journal of Product Development*, Vol. 8 No. 1, pp. 80-105.

Madigan, J.M. (1993), "Measures matrix chart: a holistic approach to understanding operations", *Quality Management Journal*, Vol. 1 No. 1, pp. 77-86.

Meybodi, M.Z. (2005), "Strategic manufacturing benchmarking", *The TQM Magazine*, Vol. 17 No. 3, pp. 249-258.

Meybodi, M.Z. (2010), "The impact of just-in-time practices on consistency of benchmarking performance measures", *Advances in Competitiveness Research*, Vol. 18 Nos 1/2, pp. 73-88.

Miller, J.G., De Meyer, A. and Nakane, J. (1992), *Benchmarking Global Manufacturing*, Business One Irwin, Homewood, IL.

Moffett, S., Anderson-Gillespie, K. and McAdam, R. (2008), "Benchmarking and performance measurement: a statistical analysis", *Benchmarking: An International Journal*, Vol. 15 No. 4, pp. 368-381.

Nassar, M. (2012), "Exploring current benchmarking practices in the Egyptian hotel sector", *Benchmarking: An International Journal*, Vol. 19 No. 6, pp. 730-742.

Newman, R.W., Hanna, M. and Duffett, W. (1995), "World class purchasing: a benchmarking of the best", *Proceedings of the Decision Sciences Institute DSI Annual Meeting, Boston, MA, November,* pp. 1617-1619.

O'Dell, C. and Grayson, C.J. (2000), "Identifying and transferring internal best practices", APQC White Paper.

Olli-Pekka Hilmola (2011), "Benchmarking efficiency of public passenger transport in larger cities", *Benchmarking: An International Journal*, Vol. 18 No 1, pp. 23-41.

Papke-Shields, K.E., Malhotra, M.K. and Grover, V. (2002), "Strategic manufacturing systems and their linkage to planning system success", *Decision Sciences*, Vol. 33 No. 1, pp. 1-30.

Paulo, A.C.M., Satolo, E., Andrietta, J.M. and Calarge, F.A. (2012), "Benchmarking the use of tools and techniques in the Six Sigma programme based on a survey conducted in a developing country", *Benchmarking: An International Journal*, Vol. 19 No. 6, pp. 690-708.

Raymond, J. (2008), "Benchmarking in public procurement", *Benchmarking: An International Journal*, Vol. 15 No. 6, pp. 782-793.

Roth, A.V., Chase, R.B., Voss, C., Rose, E. and Menor, L. (1997), "Benchmarking US services: results and implications", *Proceedings of the Decision Sciences Institute, DSI Annual Meeting, San Diego, CA, November*, pp. 1510-1512.

Routroy, S. and Pradhan, S.K. (2013), "Evaluating the critical success factors of supplier development: a case study", *Benchmarking: An International Journal*, Vol. 20 No. 3, pp. 322 -341.

Salah, A., Alazab, M., Venkatraman, S., Alazab, M. and Alazab, A. (2013), "Performance evaluation of e-government services using balanced scorecard: an empirical study in Jordan", *Benchmarking: An International Journal*, Vol. 20 No. 4, pp. 512-536.

Seong-Jong, J., Stoeberl, P.A. and Fitzer, K. (2009), "Measuring and benchmarking the performance of coffee stores for retail operations", *Benchmarking: An International Journal*, Vol. 16 No. 6, pp. 741-753.

Singh, A., Narain, R. and Yadav, R.C. (2006), "Benchmarking and performance measurement of supply chain management practices: a survey of Indian organizations", *International Journal of Services and Operations Management*, Vol. 2 No. 4, pp. 313-334.

Smith, G.P. (1997), "A change in culture brings dramatic quality improvement", *Quality Observer*, Vol. 45 No. 1, pp. 14-15.

Talluri, S. and Vazacopoulos, A. (1998), "Efficiency evaluation and benchmarking in small and medium enterprises", *Proceedings of the Decision Sciences Institute, DSI Annual Meeting, Los Vegas, NV, November*, pp. 1421-1423.

Venetucci, R. (1992), "Benchmarking: a reality check for strategy and performance objectives", *Production and Inventory Management Journal*, Vol. 33 No. 4, pp. 32-36.

Watson, G.H. (1992), *The Benchmarking Workbook: Adopting Best Practices for Performance Improvements*, Productivity Press, Portland, OR.

Watson, G.H. (1993), "How process benchmarking supports corporate strategy", *Planning Review*, Vol. 21 No. 1, pp. 12-15.

Watson, G.H. (2001), "Cycles of learning: observations of Jack Welch", *Six Sigma Forum Magazine*, Vol. 1 No. 1, pp. 13-17.

Whiting, R. (1991), "Benchmarking: lessons from best-in-class", *Electronic Business*, Vol. 17 No. 2, pp. 128-134.

Yasir, Y.F. and Sandhu, M.A. (2013), "The role of trust on the performance of strategic alliances in a cross-cultural context: a study of the UAE", *Benchmarking: An International Journal*, Vol. 20 No. 1, pp. 106-128.

Zairi, M. and Whymark, J. (2000), "The transfer of best practices: how to build culture of benchmarking and continuous learning – part 1", *Benchmarking: An International Journal*, Vol. 7 No. 1, pp. 62-78.

## Further reading

Eccles, R. G. (1991), "The performance measurement manifesto", *Harvard Business Review,* January-February.

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