

TABLE 2
New TQM dimensions

TQM-dimension	Description of dimension	Supporting literature
Innovation focus	Continuous systematic management of innovations: innovation-supporting processes; involvement of stakeholders in the innovation process	Hamel & Prahalad (1994); Tidd et al. (1997); Prajogo & Sohal (2004)
Corporate Social Responsibility	Ethical values and highest behavioral standards as essential part of the corporate culture; conciliation of economic, social and ecologic requirements; assurance of health and safety of employees	van Marrewijk et al. (2004); Hardjono & Marrewijk (2001); McAdam & Leonard (2003); Ghobadian et al. (2007); Ascigil (2010)
Strategic networks & alliances	Development and maintenance of strategic networks and alliances to assure joint success	Mellat-Parast & Digman (2007); Browning et al. (1995); Westphal et al. (1997)
Stakeholder focus	Consideration of needs and expectations of all stakeholders; transparency of and responsibility for the provision of products and services; transparency of reporting to stakeholders	van Marrewijk et al. (2004); Hardjono & Marrewijk (2001); McAdam & Leonard (2003); Radder 1998; Foster & Jonker 2003; Johansson 2008

TABLE 3

Summary of articles analyzed

Paper	Sample	Period of analysis	Operationalization of TQM	Operationalization of Performance	Findings
Mahajan et al. (1992)	12 firms (office equipment and computer industry)	3 years	Attributes of Excellence <ol style="list-style-type: none"> 1. Bias for action 2. Close to the customer 3. Autonomy and entrepreneurship 4. Productivity through people 5. Hands-on value driven 6. Stick to the knitting 7. Simple form lean staff 8. Simultaneous loose-tight properties 	Financial measures <ol style="list-style-type: none"> 1. Market to book value 2. Return on equity 3. Return on sales 4. Working capital to assets 5. Return on total capital 6. EBIT to total assets 7. Debt to equity 8. Working capital and sales 	During the first period of analysis a statistically significant correlation could be only shown for 4 measures: Return on equity, Return on sales, EBIT to total assets, Return on total capital. However, this correlation diminishes continually and thus is not significant in the following periods.
Powell (1995)	54 firms with more than 50 employees	last 3 years	TQM dimensions <ol style="list-style-type: none"> 1. Committed leadership 2. Adoption and communication of TQM 3. Closer customer relationships 4. Closer supplier relationships 5. Benchmarking 6. Increased training 7. Open organization 8. Employee empowerment 9. Zero-defects mentality 10. Flexible manufacturing 11. Process improvement 12. Measurement 	Perceived Performance <ol style="list-style-type: none"> 1. Overall financial performance 2. Overall financial performance compared to competitors 3. Revenue growth 4. Revenue growth compared to competitors 5. Profitability compared to competitors 	TQM generates economic success, but not for all firms. The success especially depends on soft TQM factors such as leadership commitment and employee empowerment rather than on TQM instruments like benchmarking, training or process improvement. Therefore, firms must ensure the development of a corporate culture that will benefit the successful implementation of TQM.

Hendricks and Singhal (1996)	34 quality award winners (91 Announcements)	3 days / 1000 days	Winning of a quality award as a proxy for the implementation of TQM	Average abnormal return on the day of announcement of the win of a quality award	The stock market reacts positively on the announcement of the win of a quality award. The reaction was stronger for small firms as well as in the case of independent awards (e.g. Malcolm Baldrige Award). Furthermore, the announcement results in a reduction of the firms' beta. The reduction of the systematic risk in turn leads to a decrease of the discount rate which partly explains the positive market reaction.
Hendricks and Singhal (1997)	463 quality award winners	10 years (6 before and 4 after winning the award)	Winning of a quality award as a proxy for the implementation of TQM	Financial measures (annual change) <ol style="list-style-type: none"> 1. EBITDA 2. EBITDA to total capital 3. EBITDA to sales 4. EBITDA per employee 5. Revenue 6. Revenue to total capital 7. Revenue per employee 8. Total cost to revenue 9. Investment to total capital 10. Headcount 11. Total capital 	The firms investigated could not exhibit any significant performance gain during the implementation phase of TQM. However, after winning a quality award, the firms could significantly outperform the control group in terms of operative results and revenue. Furthermore, some evidence was found that the award winners were more successful with regard to cost control.
Easton and Jarrell (1998)	108 firms (production and service)	5 years (after the implementation of TQM)	TQM dimensions (MBNQA) <ol style="list-style-type: none"> 1. Process focus 2. Systematic improvement 3. Companywide emphasis 4. Customer focus 	Financial measures (scaled with revenue, total capital, headcount) <ol style="list-style-type: none"> 1. Net profit 2. Operative result 3. Inventory 	The long-term performance of firms that implemented TQM is significantly improved. This is supported by analyses based on both financial measures and stock price. Furthermore, the results indicate that more advanced TQM companies

			<ol style="list-style-type: none"> 5. Management-by-fact 6. Employee involvement 7. Cross-functional management 8. Supplier performance and supplier relationships 9. Recognition of TQM as a critical competitive strategy 	<ol style="list-style-type: none"> 4. Revenue <p>Market Price</p> <ol style="list-style-type: none"> 1. With-dividend continuously compounded daily stock returns 	<p>outperform the less advanced companies, Likewise, production firms show stronger performance gains as service companies.</p>
Martinez-Lorente et al. (2000)	223 firms (production)	Target date	<p>TQM dimensions</p> <ol style="list-style-type: none"> 1. Employee relations 2. Organization 3. Product design process 4. Quality information 5. Supplier relationship 6. Process instruments 7. Design instruments 	<p>Perceived performance</p> <ol style="list-style-type: none"> 1. Market share growth 2. Average production costs 3. EBIT margin 	<p>The results indicate that only the dimensions employee relations and design instruments had a significant effect on revenue growth. As regards average production costs, a significantly positive relation could only be shown for the dimension employee relations. The missing relationship between the remaining dimensions and the performance criteria can however not be explained and contradicts TQM theory. A potential cause for the missing effect of these dimensions is the poor implementation of TQM.</p>
Das et al. (2000)	290 firms	Target date	<p>Quality practices</p> <ol style="list-style-type: none"> 1. Supply chain management 2. Quality resources and evaluation 3. Quality training 4. Customer commitment 	<p>Firm performance</p> <ol style="list-style-type: none"> 1. Market share 2. ROA 3. Market share increase <p>Customer satisfaction performance</p> <ol style="list-style-type: none"> 1. Customer retention 2. Customer satisfaction 3. On-time delivery 	<p>The results indicate a direct relationship between the quality practices and customer satisfaction performance. The effect on financial performance is, however, mediated through customer satisfaction.</p>
Douglas and Judge	229 hospitals	Target date	TQM dimensions	Perceived performance	The results indicate a positive

(2001)			<ol style="list-style-type: none"> 1. Top management team involvement 2. Quality philosophy 3. Emphasis on TQM-oriented training 4. Customer driven 5. Continuous improvement 6. Management by fact 7. Total quality methods 	<ol style="list-style-type: none"> 1. Revenue growth 2. Profit growth 3. Changes in market share 4. Return on assets 5. Long-run level of profitability <p>Expert assessment</p>	<p>correlation between the degree of TQM implementation and the perceived financial performance as well as with the expert assessment. Furthermore, it could be shown that a higher degree of structural control and exploration strengthened the impact on financial performance.</p>
Hendricks and Singhal (2001a)	435 quality award winner	5 years (1 before and 4 after the award)	Winning of a quality award as a proxy for the implementation of TQM	<p>Financial measures</p> <ol style="list-style-type: none"> 1. EBITDA 2. Revenue 3. Costs to revenue 	<p>The study investigates the influence of firm characteristics on the relation between TQM and financial performance. The results indicate that smaller firms benefit more from TQM than larger ones. Furthermore, independent awards show a stronger effect on performance than supplier awards.</p>
Hendricks and Singhal (2001b)	608 quality award winners	10 years (6 before and 4 after the award)	Winning of a quality award as a proxy for the implementation of TQM	<p>Stock price</p> <ol style="list-style-type: none"> 1. Buy-and-Hold Abnormal Returns 	<p>No performance differences between award winners and the control group could be shown during the implementation phase of TQM. In the long run, however, the award winning companies could significantly outperform the control group.</p>
Kaynak (2003)	214 firms	Target date	<p>TQM dimensions</p> <ol style="list-style-type: none"> 1. Management leadership 2. Training 3. Employee relations 4. Quality data & reporting 5. Supplier quality management 6. Product/service design 	<p>Financial performance</p> <ol style="list-style-type: none"> 1. ROI 2. Sales growth 3. Profit growth 4. Market share(-growth) <p>Quality performance</p> <ol style="list-style-type: none"> 1. Product-/Service quality 	<p>The results generally exhibit a positive relation between TQM implementation and firm performance. Thereby the different dimensions show a direct and indirect effect on operative performance, which in turn positively influences financial performance.</p>

			7. Process management	<ul style="list-style-type: none"> 2. Productivity 3. Cost of scrap and rework 4. Delivery lead time Inventory management performance <ul style="list-style-type: none"> 1. Purchase material turnover 2. Total inventory turnover 	
York and Miree (2004)	20 Baldrige award winners and 131 state award winners	approx. 30 years (up to 16 before and up to 14 after the award)	Winning of a quality award as a proxy for the implementation of TQM <ul style="list-style-type: none"> 1. Baldrige award winners 2. State quality award winners 	Hendricks and Singhal measures <ul style="list-style-type: none"> 1. EBITDA 2. Revenue 3. COGS to Revenue „Fortune“ measures <ul style="list-style-type: none"> 1. Revenue 2. Profit 3. Total assets 4. Market value 5. Earnings per Share (10 y.) 6. Total Return (10 y.) Kaplan and Norton measures <ul style="list-style-type: none"> 1. Cash Flow 2. Annual revenue growth 3. EBIT 4. Market share 5. ROE 	Both Baldrige and State award winners featured a significantly higher performance than the control group. However, it is not clear whether the relation is covariant or causal. This is further reinforced by the realization that the TQM firms already exhibited stronger financial performance than the control group before the winning of the quality award. This in turn implicates that TQM is more frequently implemented by firms that show a strong financial performance. Consequently, the relation between TQM and financial performance has a covariant character.
Balasubramanian et al. (2005)	34 Baldrige award winners and 110 J.D. Power winners	20 days (10 before and 10 after the award) and 18 months after the award	Winning of a quality award as a proxy for the implementation of TQM <ul style="list-style-type: none"> 1. Baldrige award winners 2. J.D. Power award winners 	Deviation of stock price <ul style="list-style-type: none"> 1. Market value 2. Inventory turnover 3. Tobin's Q 	The analysis shows a positive market reaction to the announcement of the Baldrige award. During the following 18 months, however, a significant positive development of performance

				4. Net profit margin	could not be proven.
Sila (2007)	286 firms	Target date	TQM dimensions 1. Leadership 2. Strategic planning 3. Customer focus 4. Information & Analysis 5. Human resource management 6. Process management 7. Supplier management	Financial and market result 1. Market share 2. Profit 3. Return on total assets 4. Overall competitive position 5. Number of successful new product and service introductions Organizational effectiveness Customer results Human resource results	The results indicate a significant direct effect of all seven TQM dimensions on all results dimensions except for financial results. However, the three results dimensions show a significant direct effect on financial performance thus supporting a significant indirect relation between TQM and financial results. The analysis of institutional factors reveals no significant differences and therefore supports the thesis of universality of TQM.
Corredor and Goni (2011)	80 quality award winners	6 years (3 before and 3 after the award)	Winning of a quality award as a proxy for the implementation of TQM	Financial measures 1. Return on total assets 2. CFROI 3. Return on sales 4. Added Value per Employee 5. Revenue to total capital 6. Debt equity ratio 7. Working Capital to revenue	The study reveals that the firms implementing TQM did not exhibit superior financial performance compared to the control group before the TQM implementation. As regards the relation between TQM and performance, however, a significant positive correlation could only be shown for those companies that implemented TQM in the first years after the revision of the EFQM Excellence Model.

