

Identifying the TQM Strategies Applied in the Financial Services sector. A Case of the Major Banks in South Africa

Teboho Caswell Chomane, Andre Vermeulen and Jan Harm C Pretorius.

Postgraduate School of Engineering Management

Faculty of Engineering and the Built Environment, University of Johannesburg
South Africa

tchomane@gmail.com, jhcpretorius@uj.ac.za, AVermeulen.research@gmail.com

Abstract

This study sought to find out the strategies of the successful implementation of Total Quality Management (TQM) principles in the South African banking sector. The study explored the employees' perceptions of the strategies through administering a questionnaire survey to 250 bank managers at different levels. These employees were selected using simple random sampling. The banks from which these employees were selected, were picked using purposive sampling. The Cronbach's validity and reliability test measured the confidence in relation to the validity, relevancy and reliability of Critical Aspects for internal consistency. SPSS-Output result for Cronbach's Alpha reliability coefficient for the set of Critical Aspects Alpha value of 0.802. The SPSS-Output of Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's test of Sphericity statistics is indicated in Table below. Furthermore, KMO values ranging between 0 and 1 show that the sum of partial correlations was relative to the sum of correlations. It is recommended that top management commitment should be secured first for the successful implementation of TQM in banks.

Key words

Banking sector; Total quality management; Service quality; competitive edge.

1.Introduction and background

Fierce competition has been thickening in the banking sector as a result of globalisation and liberalisation. This increased competition has afforded customers a wide range of choices of banking products and services. On their selection, customers select banks that can provide services that are reliable, profitable and of excellent quality (Maheswari and Padmaja, 2018). This demand on banks towards total service delivery has forced them to rethink in search for stronger and effective ways to offer better service quality and products, reduced costs, innovative processes and products. The banking service quality has become a sole factor for survival in the globally competitive market and therefore the banking sector has to take a step further in order to provide products which exceed the customers' expectations. Faced with these challenges for clients, banks have to adopt the philosophy of Total Quality Management (TQM), a concept that is well known to be applicable to manufacturing environments (Selvaraj, 2009). When TQM was adopted in manufacturing industries, the obvious benefits and effects on organisational performance were clearly noticeable. This encouraged organisations from other sectors to follow the lead.

There have been several debates and studies conducted to determine which determinants would result in the successful implementation of TQM principles. It has been agreed by many researchers that the provision of service quality was both a measure of competitiveness and key customer satisfaction factor in banks (Cook and Verma, 2002; Saravanan and Rao, 2016). This is why perceived service quality is very important to service providers like banks. Failure to provide high service quality is a disastrous recipe for banking sector failure. This was supported by many researchers who claimed that bank performance was positively and significantly linked to the bank's service quality, and the most recommended approach to achieving desired service quality performance was through the implementation of TQM (Edoun et al, 2007; Talib, 2010).

1.1 Need for the study

Though numerous research has been conducted in the area of TQM, to establish the link between service quality and business performance, few of them were carried out in the banking sector. More so, of the few that were conducted were carried out in other parts of the world and only a smaller number was done in South Africa. Of those that were carried out in South Africa, none of them investigated the determinants of successful implementation of TQM in South African banking sector. This study sought to establish whether the determinants which have been exploited for the successful implementation of TQM in other parts of the world were being employed appropriately to in South African banking sector to produce similar successful service quality results.

1.2 Study aims and scope

This study sought to present on the TQM strategies applied in the financial services sector in South Africa, to improve service quality and achieve banking excellence. This study envisages to identify critical strategic factors for TQM resulting in high impact implementation in the banking sector. The study contributes to the banking sector body of knowledge aiming to inform the banking sector management in the implementation of TQM. The study also aims to contribute to academic literature in conducting of further studies in banking sector. This paper includes: - literature review focusing on: (i) TQM and service quality, (ii) service quality in the banking sector, (iii) principles of TQM, (iv) TQM implementation, identification of critical dimensions for TQM; research methodology; findings, discussion, conclusion and recommendations

2. Literature Review

The TQM philosophy is a concept that has been adopted by many organisations for its ability to turn around quality of service delivered. This suggested that the effective implementation of TQM was critical for the success of banks.

2.1 TQM and quality of service

Research has revealed that the successful banking service strategies could be perceived and measured in dimensions which included: product quality; online service quality; customer service quality; banking service and automated service quality (Talib, 2010). Improved performance in these areas achieves: (i) improved financial performance, (ii) customer satisfaction and (iii) competitiveness. Even though they do not adequately measure the service quality, their effect in service sector has been evidenced through customer satisfaction survey that were conducted regularly to evaluate the banks' current versus past performance (Talib and Rahman, 2010). Banks also use benchmark to measure the performance of their strategies against those of their key competitors. Through these various measurement techniques, particularly TQM, should enable banks to continuously improve their service quality.

2.2 Principles of TQM

In their comprehensive research of TQM literature, Psychogios and Priporas (2009) led to the discovery of 9 important principles of 'soft' TQM shown in Table 1 below. The first principle, in resemblance of most TQM principles, emphasizes the organisational-wide nature of TQM with total participation from everyone in the organisation. Prajogo and Sohal (2011) pointed out that the participation of all employees in the determination of quality is beneficial in that it leads to a flow of information and knowledge that contributes to the much-needed lower-level intelligence for problem solving. Morgan and Murgatroyd (2006) in the same vein noted that the 'total' in TQM is means that the entire members of an organisation have to be involved in the process of improving quality. Oluwatoyin and Oluseun (2008) furthermore pointed out that TQM is basically concerned with the involvement and organisation of people in all departments, all activities and everyone at every level.

Table 1. Soft TQM concepts, Pyschogios and Priporas (2009)

TQM Concepts	
I.	Total Employee Involvement
II.	Continuous Improvement
III.	Continuous Training
IV.	Teamwork
V.	Empowerment
VI.	Top-management Commitment and Support
VII.	Democratic Management Style
VIII.	Customer/Citizen Satisfaction
IX.	Culture Change

The United States of America's Department of Commerce established the Malcom Baldrige Award which came into effect in 1987 as a form of quality movement within the country (Demirbag, Tatoglu, Tekinkus and Zaim - 1998). Companies have since strived to be world class and achieve a very high level of quality with less failure. The Motorola six sigma approach was one of the most effective quality initiatives with only a reported 3.4 errors per million units (Demming, 1993). The approach used to attain this position can be attributed to several methods used, chief among them is; carrying out an analysis of work processes and defining the correct way to do a job; finding out the root cause of errors and eradicating them in a systematic way (Demirbag, Tatoglu, Tekinkus and Zaim -1998). Likewise, TQM is embodied by a set of strategies that are aimed at enhancing the effectiveness and organisational productivity. Oluwatoyin & Oluseun (2008) identified nine strategies but only three crucial strategies for building TQM have been discussed

Deming (1993) cited in Zhang (2009), stressed that it is the duty of the leadership to initiate training and educational programs so that employees can accept continuous improvement schemes while also growing intellectually. Leadership serves the purpose of overseeing improvements in performance, quality, technology, productivity and cooperation between employees. Senior leadership also has the responsibility to tinker with the system where it appears to be faulty and also for the purposes of continuous improvement. Management must set the strategy and provide employees with the means to achieve the organisational objectives. DuBrin (2011) asserts that management the power to decide the 'technological strategy' to be pursued. This is especially important because a selected strategy will ultimately decide the fate of the organisation. Leadership is about providing direction and without the right vision and visionaries, profitability and productivity will be difficult to realise. The leadership must therefore show a deep commitment towards achieving quality so that employees will follow suit (Kothari, 2004).

2.3 Continuous improvement

In terms of continuous improvement standards of quality is not static but ever changing, evidence of this is the presence of continuous improvement programs in the best companies in the world. Achieving quality in an organisation requires a well-coordinated plan (Deming, 1995). It is thus vital that continuous improvement be done to all processes including the TQM program also (Davies, 2003). Dale (2005) stated that consistent organisational outputs can only be achieved if there is some form of continuous improvement initiative in place. The improvement of quality cannot be described as a static activity but rather a continuous process without an end. The end goal should be on changing the status quo, looking for more new avenues to explore. Gronroos (1982) observed that primary focus should therefore be on 'planning, prevention and anticipation'. Oluwatoyin and Oluseun (2008) also underscored the importance for organisations to develop managers who are relentless in their desire to improve quality to meet the never-ending customer needs. To add on that Juran (2001) asserts that it is imperative that an organisation have a Quality council to implement and monitor all continuous improvement strategies and that quality improvement strategies must not be done from a short-term perspective. Locke and Latham (1990) however stresses that organisations need to be wary of complacency caused as result of achieving some of the quality improvement objectives as this is a common occurrence.

2.4 Employee participation

In order to achieve world class quality there should be a dedicated, committed, participative, trained and empowered labour force Cleary (2009). An organisation should have a robust human resource development plan. The only resources that can increase in value of time are human resources but this increase in value can only be realised when there are proper development programs. Besterfield et al. (2011) defined empowerment as an atmosphere where people are willing to and confident of taking responsibility, commitment and ownership to improve the work process and take measures to meet stakeholder requirements in a way that advances the goals of the organisation. Cleary (2009) states that all employee empowerment initiatives should be geared towards increased control of work as this what TQM tries to achieve through empowerment. TQM ensures a bottom-up problem-solving approach as continuous improvement processes are done by even lower-level employees. Vouzas, (2014) further supports this claim by stating that senior management can empower employees by assigning them higher authority tasks previously reserved for higher offices. Vouzas, (2014) claims that this delegation of higher-level work will help institutionalize employee involvement and participation in the long run. Work groups will as a result be able to tackle on top management responsibility. Gronroos (1982) is of the opinion that employees who are used to being empowered are versatile enough to use their skills in daily tasks and tend to exhibit high levels of responsibility and sound judgment.

Schoenmaker (2016) notes that in TQM team work is crucial for continuous improvement and is an important condition for its success. It is generally believed that if people work collectively the results would be greater than those that could be achieved as individuals. Lau (2013) is of the opinion that teams should be 'catholic' including

those from higher level departments cascading down to the lower levels of the organisation. Schoenmaker (2016) points out that teams are necessary for flexibility in organisations and also for developing trust among all organizational members. Conventional management approaches are largely departmentalized and each department is responsible for its own work. However, TQM advocates for the whole organization's involvement in dealing with issues of quality and not individual departments. Thus cross-functional work groups are needed for solving inter-departmental problems.

2.5 Banking service quality

Customers' demands for higher service quality has become a serious threat to all service organisations. Consequently, service quality has become a critical factor that should be addressed to maintain and expand business in a highly competitive markets (Maheswari and Padmaja, 2018). Therefore, to survive in such marketplaces, banks should provide their customers with superior quality services.

Banks have realised that customers' expectations on service quality have greatly changed (Wang, Lo and Hui, 2003). It was from this observation that, banks no longer afforded to ignore how customers perceived their service quality. They have observed that service quality went beyond just satisfying customers and meeting their needs, but exceeding their expectations (Al-shobaki, Fouad and Al-bashir, 2010). Banks have therefore, been under pressure to commit themselves to improve their services continuously and build stronger relationships with their customers. Today, banks have acknowledged that, in improving service quality on a long term basis, technology was the enabler (Li, Zhao and Lee, 2000). Through the effective use of technology, banks could empower themselves to develop new products and improve existing services. Research has shown that, technology did not only support service provision, but it enhanced the superiority of the service quality (Reddy, 2018). Other studies have also identified areas where service quality could be improved in order to exceed customers' expectations (Mansour, 2007; Al-shobaki, Fouad and Al-bashir, 2010; Maheswari, 2018). These areas fall under four banking products classifications through which service quality could be demonstrated; (i) Banking service product quality; (ii) Customer service quality; (iii) Automated service quality; and (iv) Online e-service quality.

2.6 Implementation of TQM in banking

Literature related to the implementation of TQM activities in banking sector was reviewed. The implementation of TQM in the banking sector has been reported to be a recent development (Talib and Rahman, 2010). A study that was conducted by Mellahi, K and Eyubogulu (2001) used case study approach to study six cases to arrive at conclusions on the key factors that result in successful implementation of TQM in banking sector in the Turkey. The study revealed that successful strategies of TQM included: (i) management commitment and enthusiasm to TQM, (ii) highly competent and educated management, (iii) commitment to continuous process improvement, and (iv) regular stakeholder and customer engagement.

In a research which was a comparative study on implementing TQM in the Australian and Korean banking industries, the paper developed a model which linked customer loyalty, perceived service quality, employee satisfaction and customer satisfaction with TQM implementation (Kayis, Kim and Shin, 2003). When the study tested the model, it had developed, it found that there were significant path links and relationships between customer loyalty, perceived service quality, employee satisfaction and management commitment with TQM implementation. Another study conducted on Managing Service Quality the paper discussed the importance of education and training employees to contribute in the implementation of TQM in banking sector in South Africa. Also key to the implementation of TQM was management understanding of and commitment to TQM methods and principles were established to be critical (Vermeulen and Crous, 2000). However, there was no evidence found to show that the banks in South Africa had a well-developed TQM training plan and strategy.

In 2007, a paper which examined the critical success factors for the implementation of TQM in the banking sector in UAE was published. The study revealed that 16 strategic factors were critical to the implementation success of TQM (Al-Marri, Ahmed and Zairi, 2003). These factors included: (i) senior management support; (ii) implementation strategy (inclusive of strategy plan that provide employees a road map and direction); (iii) benchmarking; (iv) customer focus; (v) continuous improvement; (vi) quality system; (vii) quality department; (viii) human resource management; (ix) application of TQM principles in all departments; (x) application of TQM principles on daily basis; (xi) service culture; (xii) service performance measurement; (xiii) resources allocation; (xiv) quality service technologies; (xv) employees and social responsibility. From the literature reviewed, there is evidence that, there are three strategies which are critical in the implementation of TQM. This study has therefore sought to present only three TQM strategies applied in the financial services sector in South Africa to improve service quality and achieve banking excellence namely (i) management commitment, (ii) employee competence, and (iii) process improvement.

3. Methodology

In conducting this study, a survey technique was used. The survey sought to identify the strategies and actions that impact the successful implementation of TQM in the major South African commercial banking sector. The focus is on finding out the three most important strategic factors that have to be considered by the management in order to achieve the best service quality objectives. These included: (i) Management Commitment; (ii) Employee Competence; and (iii) Process Improvement.

3.1 Sample size and sampling technique

The questionnaire used for the survey was distributed to the bank employees who were selected using simple random sampling. Two hundred and fifty (n=250) received the questionnaires. Only 208 were completed, therefore a 83% response. Of the 208 respondents 60% were male (n=125) and 40% were female (n=83). The response rate (*n*) was large enough to provide representation as represented by:

$$n = \frac{\chi^2 N \hat{P} (1 - \hat{P})}{d^2 (N - 1) + \chi^2 \hat{P} (1 - \hat{P})}$$

Where: *n*= desired sample size; *N*=the given population; *d*=the degree of accuracy is 0.05; *X*²=table value of chi square; *P* =population proportion: assumed to be 0.5

Primary data was gathered by means of a structured questionnaire. Quantitative analysis was applied to determine the success determinants of implementing of Total Quality Management in the banking sector in South Africa. Using the Likert scale questionnaire, the participants were showing their level of agreement. This study was descriptive in nature, quantitative data were collected. A statistical package for social sciences (SPSS) was applied for the analysis of the data and to compute the responses from the respondents. Reliability analysis measure was performed using Cronbach's alpha. The SPSS-Output of Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's test of Sphericity data were also carried out. Overall Quality of Implementation-Cronbach Alpha was computed using the correlation, Matrix.

4. Results and Discussion

The determinants of the determinants of successful implementation of Total Quality Management were calculated to depict the importance of each respondent. Table 2 shows the mean scores. It is noted that Commitment scored the highest score of 3.22, whilst employee competence has the lowest score of 2.96.

Table 2. Mean scores

Variable	Mean	SD	Eigenvalue	Percentage of Variance
Management	3.22	0.954	1.404	70.248
Commitment	2.96	0.949	1.1790	59.700
Employee Competence	3.13	0.750	1.813	60.425
Process Improvement				

Reliability analysis measure the internal stability and consistency as illustrated in Table 3. The Cronbach's alpha was calculated on determining inter item reliability and consistency of how well the set items were correlated to one another. Cronbach's Alpha (reliability) score = 0.755 which is within the parameter of > 0.70.

Table 3. Reliability of total items

Cronbach's Alpha	Cronbach's Alpha Based on Standardised items	No of items
0,755	0,756	6

The SPSS-Output of Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's test of Sphericity data is presented in Table 4 below. Furthermore, KMO values ranged between 0 and 1 indicate that the total of fractional relationships was comparative with the whole of connections. KMO values are inadequate and were

under 0.5 and the factors, at that point require restorative or remedial activity, either erasing the "culpable factors" or including different factors identified with the offending variables.

Table 4. KMO and Bartlett's test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin of Sampling Adequacy		0.692
Bartlett's Test Sphericity	Approx. Chi-Square	2188.160
	Df	115
	Sig	0.000

Table 5. Reliability of individual items

Variable	No of items	Implementation: Cronbach's alpha	Importance: Cronbach's alpha
Management Commitment	8	0.849	0.897
Process Improvement	5	0.815	0.798
Employee participation	8	0.846	0.814

Overall Quality of Implementation-Cronbach Alpha for the entire scale = 0.825 and Rating of Importance-Cronbach Alpha for the entire scale = 0.842 indicating that the items used in the survey were statistically reliable; hence they measured a single unidimensional latent construct (Table 5). The data collected for this study was therefore, found to be internally stable and consistent. Inter-factor relationships show the associations amongst the variables. It is key to note that there is an interrelationship amongst the variables selected for this study (Table 6).

Table 6. Correlation matrix

Correlation	Management commitment	Process Improvement	Employee Competence
Management Commitment	1	0.61	0.54
Process Improvement	0.61	1	0.58
Employee Competence	0.54	0.58	1

5. Conclusion

The results indicate that there is a need for top management commitment as one of the important steps in TQM implementation efforts. It should be noted that if there is lack of commitment within the top brass of the organisation, chances are high that implementation of TQM will fail. It is therefore clear that management should lead by example and show their commitment in execution of their duties and should 'walk the talk' as this will influence employees' commitment towards implementation of TQM. The perception of management on quality will have an effect on improving employees' quality awareness and that will difficult to implement TQM if

management lacks commitment and quality. This should be the primary goal of the top management and that management should show their commitment during implementation which in turn influence their subordinates.

There is need to align management leadership and thinking so that they will be more positive to the total quality management philosophy, hence objectives will be achieved. It is of great importance to choose leaders who have necessary qualifications and that the same efficient, leaders should allow employees to participate in the business operations. Leaders who therefore motivate employees and appreciate their efforts where necessary as well as training employees so that they will have necessary skills and expertise. This will improve the relationship between top management and their subordinate as well as leading to flexible relationship among various departments. Employees' satisfaction and loyalty will be enhanced through good relationship with top management.

As "new technologies" are developed, the banking environment in South Africa need to adopt modern technology to enable them to remain competitive in the global market, hence need for continuous improvement. Problems will be discovered during the course of the day and the organization need to critically analyse root causes as well as eliminating barriers hindering quality and customer service excellence Therefore, improves the way the organization conduct its operations. The study revealed that banking organisations in South Africa need to manage people / employees and operations more efficiently and effectively if total quality objectives are to be achieved.

Furthermore, it is crucial that banks should determine and develop business processes based on specific needs. Once these processes have been developed, employees should absorb their roles and responsibilities and performance indicators should be in place so that performance measurement can be conducted which in turn enhance continuous improvement. In the long run, this will reduce the rate of errors and deviation in operations, speed up how operation activities are done as well as improving efficiency of current operations being done by the bank.

References

- Al-Marri, K., Ahmed, A. and Zairi, M. ., 'Excellence in service: an empirical study of the UAE banking sector.', *International Journal of Quality and Reliability Management*, 24:, pp. 164-176, 2003.
- Al-shobaki, S. D., Fouad, R. H. and Al-bashir, A., 'The Implementation of Total Quality Management (TQM) for The Banking Sector in Jordan'. 4(2), pp. 304–313. 2010
- Besterfield, H. D., Besterfield-Michna, C., Besterfield, H. G., & Besterfield-Sacre, M., 'Total quality management' (2nd ed.). London: Prentice Hall. 2011.
- Cleary, B., 'Supporting empowerment with Deming's PDSA cycle empowerment. *Organizations*'. 3(2), 34-39. 2009
- Cook, L. S. and Verma, R., 'Exploring the linkages between quality system, service quality, and performance excellence: service providers' perspectives', *Quality Management Critical Factors of Quality Management*', *Decision Science*, 20, pp. 810-829. 2002
- Dale, B.G. Wu, P. Y. Zairi. M. Williams, A. R.T. Van Der Wiele, T., 'Total Quality Management and Theory: An Exploratory Study of Contribution'. *Total Quality Management*. 2005
- Edoun, E. I., 'Application of Total Quality Management (TQM) in the South African Banking Sector : The Case of First National Bank (FNB) in South Africa', pp. 1–31. 2015.
- Deming, W.E., 'Out of the crisis'. Cambridge, MA: Massachusetts Institute of Technology. 1998
- Demirbag, M., Tatoglu, E., Tekinkus, M. and Zaim, S., 'An analysis of the relationship'. *Decision Sciences*, Vol. 35, No. 3, pp. 393-422. 2006.
- Gronroos, Christian., 'Service Quality and the Consumer Relation of Service Firms and Institutions.' in Christian Gronroos, eds., *Strategic Management and Marketing in the Service Sector*, 20-35. 1982.
- Juran, J.M. and Gryna, F.M., 'Quality Planning and Analysis'. Third edition, McGraw-Hill, Inc., New York. 1993
- Kayis, B., Kim, H. and Shin, T. H., 'A comparative analysis of cultural, conceptual and practical constraints on quality management implementations--findings from Australian and Korean banking industries.', *Total Quality Management & Business Excellence*, 14, pp.765–7. 2003
- Kothari, C.R., *Research Methodology. Methods and Techniques*'. 2nd Edition. New Age International Publishers. 2004.
- Locke, E.A. and Latham, G.P., 'A theory of goal setting and task performance', Prentice-Hall, Englewood Cliffs, NJ. 1990.
- Maheswari, D., "The Impact of Tqm on Banking Service Performance", *IOSR Journal of Business and Management (IOSR-JBM)*, 20(5). 2018
- Maheswari, D. and Padmaja, R., 'The Impact of TQM on Banking Service Performance', 20(5), pp. 62–64. 2018. doi: 10.9790/487X-2005026264.

- Morgan, C., and Murgatroyd, S., 'Total quality management in the public sector'. Buckingham, UK: Open University Press. 2013.
- Mellahi, K and Eyubogulu, Critical factors for successful total quality management implementation in Turkey: evidence from the banking sector" *Total Quality Management*, 2001, •Taylor & Franci, 2001.
- Oluwatoyin, A. & Oluseun A., *Total Quality Management. A test of the effect of TQM on performance and stakeholder satisfaction*. Blekinge Institute of Technology. 2008
- Reddy, M., 'Total Quality Management (TQM): A Catalyst for Service Delivery in the South African Police Service', pp. 5–21, 2018
- Saravanan, R. and Rao, K. S., 'An analysis of total quality service dimensions in service sector-a case study.', *International Journal of Management and Systems*, 22, pp. 261–267, 2016
- Selvaraj, M., 'TQM in Indian commercial banks: a comparative study.', *Journal of Marketing and Communication*, 4, 2009
- Talib, F., 'An overview of Total Quality Management: Understanding the fundamentals in service organisation.', *International Journal of Advanced Quality Management*, 1(1), 2010
- Talib, Z. and Rahman, Z., 'Studying the impact of total quality management in service industries.', *International Journal of Productivity and Quality Management*, 6, 2010.
- Vinzant, D. H. and Vinzant, J., 'Strategy and Organizational Capacity: Finding a Fit'. *Public Productivity and Management Review* 20(2), pp. 139–157, 2009.
- Vermeulen, W. and Crous, M. J., 'Training and education for TQM in the commercial banking industry of South Africa.', *Managing Service Quality*, 10, pp. 61–67, 2000
- Vouzas, F., 'HR utilization and quality improvement: The reality and the rhetoric - the case of Greek industry'. *The TQM Magazine*. 2014
- Wang, Y., Lo, H. P. and Hui, Y., 'The antecedents of service quality and product quality and their influences on bank reputation: evidence from banking industry in China.', *Managing Service Quality*, 13, pp. 72-83. 2003.
- Zhang, Z., 'Developing a model of quality management methods and evaluating their effects on business performance'. *Total Quality Management*, 11, 129–138, 2009.