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Quality management approaches and their impact on firms' financial performance – An Australian study



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ABSTRACT

The study of small manufacturing firms typically focuses on issues of entrepreneurship, business or operations strategy. Alternate issues remain scarce, and the implications for organisational performance are modest. In the Australian context, managers have often been criticised for their failure to recognise that quality and innovation are a key driving force to performance. This research utilises the work of several authors to develop quality orientations for small Australian manufacturing firms (SAMFs) to purposefully bridge the gaps in the business literature, and enable the evaluation of various performance outcomes. Specifically, this study investigates whether a firm's stated quality orientation is useful in differentiating firm performance. The research utilises longitudinal panel data gathered by the Australian Bureau of Statistics growth and performance survey over four years from financial year 1995 to 1998. We demonstrate that firm quality management orientation does provide a statistically significant financial performance advantage (and by inference survival advantage) over those SAMFs who do not engage in quality management. The research is a significant addition to the quality – financial performance literature, and provides a pathway forward for the use of two new financial (productivity) ratios as performance measures.

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1. Introduction

A lack of empirical evidence in the literature linking the operationalization of quality management (QM) systems with objective financial performance measures was the motivation behind writing this paper. Research was undertaken collaboratively between the Australian Bureau of Statistics (ABS) and Monash University in Australia. It is an historical perspective, which incorporates longitudinal panel data from small manufacturing firms spanning the financial years 1995–1998.

High protection levels post-World War 2 characterised Australian productive capacity up to the early 1980s. This resulted in the slow adoption of advanced technologies and quality systems, and the rapid decline in the competitiveness of the Australian manufacturing industry. The floating of the Australian dollar in 1983 (depreciation by over 30 per cent to 1986), and the Button Plan of 1987 (a tariff reduction programme), heralded a period of massive rationalisation and restructuring to produce a more innovative, efficient and export oriented manufacturing sector. At the centre

of this programme was a quality-based approach, from which firms sought to improve their operations, thereby enabling them to better meet the needs of local and export customers. Some key systemic changes associated with the Australian manufacturing industry have been:

- Make to order and inventory management systems,
- Integrated Quality Systems,
- Strategic relationships with key value chain members,
- Introduction of benchmarking systems to monitor and drive performance,
- Outsourcing of non-core business activities.

As a result, there was a rapid rise in the adoption of quality management (QM) practices from the late 1980s. However, it was not until the ABS's Growth and Performance survey (GAPS) that it was possible to determine, as well as measure, drivers of business performance and growth (i.e. from 1995 to 1998). An implicit challenge of the survey was to determine whether implementing quality management (QM) practices has a positive impact on a firm's financial performance. Many scholars have attempted to address this question, amongst the most recent, [Klingenberg et al. \(2013\)](#) and [Duarte et al. \(2011\)](#), but in general their results have failed to produce

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a positive link. This paradoxical link between QM practices and process performance, with little to no effect on financial performance, has renewed the call to uncover more suitable and objective measures. Our paper proposes the use of financial productivity ratios as a more appropriate means of determining links between QM practices and financial performance.

From here, Section 2 describes the literature and hypothesis. Section 3 outlines the research method adopted. This is followed by the findings (Section 4) and discussion (Section 4.2). The paper finishes with concluding remarks, limitations and future research (Section 5).

2. Literature and hypothesis

The achievement of economic advantage (via scale and/or scope) commenced with the implementation of quality control techniques in the early 20th Century, when increasing volumes meant methods of inspection had to be embedded into the production cycle to improve and maintain quality (Montgomery, 1989, p. 229; Taylor, 2003). The significant difference between early and late 20th Century quality approaches was the expansion of product/operational quality to the concept of total quality (Feigenbaum, 1961, 1983). This philosophy postulated that quality could be applied to every aspect of an organisation (Ishikawa, 1985). The awareness of quality was heightened by the superior quality of Japanese export products in the 1970s and '80's, due in large part to the impact of William Edwards Deming on Japanese manufacturing post World War II. The economic growth generated by Japanese international competitiveness in late 20th Century laid the groundwork for widespread change to technology and managerial principles of quality throughout the Western world.

The Standards Australia definition of quality was defined as (in quality management systems - Fundamentals and vocabulary SAI, 2000, p.8):

Quality (is the) degree to which a set of inherent characteristics (distinguishing feature) fulfils requirements (need or expectation that is stated, generally implied or obligatory).

This definition reflects general use of the term by encompassing both a user-based and fitness for use definition of quality. Companies in general use such a quality strategy in an effort to develop "perceived quality" in the mind of existing and potential customers.

Although Deming never provided a formal definition of quality, the philosophy was embodied in the Deming Chain Reaction Theory (Deming, 1986). Simply stated, a chain reaction can be established if a firm first improves its quality, and then costs decrease because of fewer mistakes and delays. This should then result in reduced rework, improved use of time and materials, and ultimately improvement in total plant productivity (an argument supporting TQM practices). Arguably, the firm should be able to capture market growth with better quality, lower costs (and thus price setting power), and not only stay in business, but also raise employment levels (by virtue of scale and/or scope).

2.1. Quality management practices and their link to performance

Quality proponents such as Deming (1982) and Juran (1988) argued that quality was a fundamental driver of productivity and performance. Their writings, combined with the Japanese post-War success, established quality as a cornerstone for many production strategies, philosophies and techniques such as just-in-time (JIT), Lean Manufacturing, Total Quality Management (TQM), Total Productive Maintenance (TPM) and in recent times to address issues of environmental sustainability, Lean Green Six Sigma (Agarwal et al., 2013; Dhalgaard-Park et al., 2013; Klingenberg et al., 2013).

Yet the evolution of QM has not happened without controversies. Numerous studies have attempted to prove positive relationships between QM practices and performance (Abdullah and Tari, 2012; Duarte et al., 2011; Klingenberg et al., 2013; Zatzick et al., 2012), with some studies being more successful in determining that relationship than others (Corbett et al., 2005; Lo et al., 2009; Naveh and Marcus, 2005). Moreover, in reviewing 25 years of the QM literature, Dhalgaard-Park et al. (2013) discovered that although concepts such as TQM had been labelled a management fad, and have led to a declining number of published works, publications on other QM concepts such as JIT and Lean are trending upwards. Dhalgaard-Park et al. (2013) concluded that the study of QM has matured whereby research had shifted away from TQM to focus on tools, techniques, determinants of establishing positive quality–performance relationships (Abdullah and Tari, 2012; Agarwal et al., 2013; Gutierrez Gutierrez et al., 2012; Pinho, 2008) and improving measurement systems (Camacho-Minano et al., 2013; Garengo, 2009; Lobo et al., 2012; Lockamy III, 1998). In this respect, research into QM has taken on horizontal and vertical dimensions, where horizontal movement has seen a broadening of QM's conceptual framework and applicability; while vertical movement has seen investigations into deeper meanings of quality and firm behaviour (Dhalgaard-Park et al., 2013).

When unpacking the relationship between QM practices and performance, scholars such as Wilkinson et al. (1998), Evans and Lindsay (1999), and Kaynak (2003) have argued for direct and indirect effects of hard (technique and tools driven) and soft (people focused) practices. Recent research by Abdullah and Tari (2012) provided a comprehensive review of hard and soft practices, while highlighting their direct and indirect effects on firm performance. Zatzick et al. (2012) broadened the discussion to include the notion of internal fit of TQM practices with strategy, concluding that TQM aligned well with cost leadership but not with a differentiation strategic orientation (Porter, 1980). Other studies have sought to group QM into 'universal' and/or 'contingent' practices (Agarwal et al., 2013; Chen, 2013; Duarte et al., 2011), in the hope of explaining why (dependent) outcomes vary from firm to firm.

Several scholarly efforts have sought to explain the occurrences of mixed outcomes from previous studies by analysing the period over which positive effects of QM practices can be realized. That is a better understanding of the time lag between implementation and expected outcomes can help researchers gain better insights into cause and effects, as opposed to attributing mixed outcomes to differing research designs. In particular, Chen (2013) postulated that the huge variety of TQM tools may have led numerous firms to select inappropriate tools for their business and/or had implemented those tools at an inappropriate time. De Meyer and Ferdows (1990) touched upon the concept of time in terms of a delay, which is commonly associated with the 'short-term negative, long-term positive' results that accompany the implementation of certain QM practices. But more importantly firms tend to underestimate the duration of negative impact (see De Meyer and Ferdows (1990)). Supporting this claim Tsai et al. (1991) report that high-quality strategies will increase costs and depress return on assets (ROA) in the short term, but that after four years, the negative effect of these early costs on ROA is dissipated. In contrast, Beal and Lockamy (1999) reported that quality differentiation was found to have a positive and significant effect on firm performance in the early stages of industry life cycles (but not the later stages).

Managers are particularly interested in knowing if the implementation of QM practices has any impact on their business. Measuring performance is generally regarded as a complex problem in organisational studies (Lentz, 1981; Venkatraman and Ramanujam, 1986). Data on performance is typically acquired through survey instruments, which measure perception (Chen, 2013; Lin et al., 2005; Prajogo and Brown, 2006); or rely on annual reports or databases to yield objective data such as profit margin

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