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Quality Methods in Australian Small and Medium Sized Enterprises: A Research Framework

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ABSTRACT
Quality methods in Australian industry gained much attention in the late 1980s and for most of the 1990s. In particular, quality methods such as quality systems and quality system certification had prominence, as Governments and large private sector firms attempted to improve their supply-chains. The aim of this paper is to demonstrate a rigorous and holistic approach to investigating the applicability of quality methods in Australian small and medium sized enterprises (SMEs). It describes the research framework developed to further investigate the impact of quality methods on Australian SMEs, and illustrates how the framework leads to a broader exploratory study.

Keywords: Research Methods, Quality Methods, SME, Australia

1.0 Introduction
Since the late 1980s and throughout the 1990s, the role of quality methods¹ in Australian small and medium sized enterprises² (SMEs) has been at the centre of much debate, focusing on whether quality methods, such as quality assurance, quality improvement, total quality management and numerous others, apply in the context of SMEs. This became a key issue for SMEs, as customer insistence on quality systems (ie a specific quality method) drove a number of SMEs to develop these systems, and in many cases SMEs were required or perceived a requirement to gain independent quality system certification. Increasingly, concerns arose that quality systems and quality system certification were seen as an imposition to SMEs, “a ticket to trade”, and were not providing the tangible benefits expected [Rooney, 1991; Bell, 1994; Dept of Industry, Science and Technology, 1995; Gome, 1996].

SMEs are not a homogenous group and by their very nature exhibit diversity, such as: size, industry type, location, trading framework, organisational framework and so on. Factors such as: how these businesses come into existence, structures, ability to handle change, their lifecycle, viability and longevity all contribute to the elaborate picture of Australian SMEs [Husband & Mandal, 1999a; Husband & Mandal, 1999b]. Therefore, solutions for introducing quality methods into the operations of these types of businesses are likely to be complex.

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¹ The term "quality method" is used to describe the loose collection of ideas, concepts, theories, models, methods etc which are described in the literature and have been referred to in relation to quality control, quality assurance, total quality management and related approaches [Wider Quality Movement, 1997; Husband & Mandal, 1999b]. Refer to Section 3.0 for further detail.

² Using the Australian Bureau Statistics [1999] definition (ie non-employing, micro, small and medium - excluding agriculture, public sector etc), Australian SMEs represent almost 990,000 businesses, provide over 95% of Australia’s private sector employment and contribute significantly to gross domestic product.
Consequently, media attention and debate grew regarding the validity or otherwise of quality methods within the SME sector of the Australian economy. In the literature, numerous quality models or approaches were suggested for SMEs. However, there was little or no evidence to support the success or otherwise of these models as they apply to SMEs, and research in this area was, and continues to be, largely restricted to a particular quality method (eg quality systems and quality systems certification, Business Excellence Framework etc). Specifically, the research to date has varied in focus, approach and outcomes, and the lack of generalisability strongly indicated the need for broader exploratory studies in the context of Australian SMEs.

2.0 Implications of this Research

A review of the available literature showed that, while there are a handful of studies examining the implications of quality methods in Australian SMEs, they presented a number of difficulties in drawing generalised conclusions [Husband & Mandal, 1999a] due to:

- Differing treatment of SMEs either by definition or as part of a larger sample including larger enterprises.
- Concentration on different industry sectors or particular types of quality methods.
- Non-quantitatively based outcomes or assertions made in some studies.
- Varying sample size or industry based samples - ie lacking generalisability.
- Tendency to focus on a particular quality method - such as quality systems or total quality management.
- All of the studies were cross-sectional in nature and did not explain time dependent differences.

Some evidence from overseas studies was also examined. However, due to the definition of SMEs (eg USA medium sized enterprise regarded as 1500 people), quality methods described or the specific nature of the studies, these studies did not provide any additional insights. Overall, the emergent themes from all of the studies reviewed and the main issues facing SMEs, and industry generally, were cost, time and whether quality methods apply or provide enhanced performance. Although, validity, reliability and generalisability of the overall findings of these studies remain mainly inconclusive with arguments, both for and against quality methods in SMEs, being presented.

The numerous approaches to quality and quality methods are encompassed in terms such as: quality control, quality assurance, quality systems, quality improvement, total quality management, statistical process control - to name a few. One of the significant problems with the terms used to relate to quality methods is the lack of clear definition and the lack of reference to sound theoretical bases upon which these methods are derived - ie statistics, management, behavioural sciences etc [Wider Quality Movement, 1997]. Nonetheless, examination of the numerous publications on quality methods reveals two central and closely linked themes [Husband & Mandal, 1999a]:

- *Customer focus* - where the needs and expectations of the customer become central to the provision of goods and services (ie quality is the supplier’s problem)
- *Organisational well-being* - covering every aspect of the organisation including its need to survive, on-going performance and context in which the organisation operates

With the apparent lack of similar research and these descriptors of SMEs and quality methods, a research framework for an exploratory investigation was developed and is based on a hypothetico-deductive method involving: observation, preliminary information gathering, theory formulation, hypothesising, further scientific data collection, data analysis and deduction [Sekaran, 1992].
3.0 Developing the Research Framework

A similar research framework necessary for an exploratory investigation into the relationships between quality methods and SMEs [Husband & Mandal, 1999b] was not evident in the literature or any previous studies. Therefore, the development of a suitable framework required a conceptual foundation encompassing the context of SMEs, quality methods and a means of testing any relationships in this context.

The research framework was developed around the central research question:

*Are quality methods applicable to Australian SMEs?*

Consequently, several questions unfolded, such as: (1) what are the specific methods that best suit SMEs?, (2) what makes these methods relevant to SMEs?, and (3) how should these methods be applied and/or integrated into the strategic and operating frameworks of SMEs?

In order for these questions to be investigated, a number of concepts were defined in order to establish relationships, develop propositions and to provide a basis data collection. The concepts are:

- **Drivers** - forces acting on a SME to choose a quality method(s)
- **Organisational Context** - internal and external relationships of the various aspects which comprise a SME
- **Quality Methods** - specific methods focusing on quality that are used to identify and bring about improvements and/or increased performance
- **Moderators** - influences effecting or diluting the driver(s), organisational context and the quality method(s) used
- **Outcomes / Impacts** - resultant changes in customer focus and organisational well-being (i.e. central themes of quality)

The **Drivers** for SMEs to adopt quality methods are covered in four dimensions:

- **Customers** - stated or implied requirements
- **Competition** - comparative improvement or performance
- **Legal** - product, service, process or industry obligations or requirements
- **Organisational** - perceived need to improve some aspect of the business (i.e. this could also be in response to competition)

The **Organisational Context** has been developed as a conceptual model to provide a means of identifying the nexus between SMEs and quality methods [Husband & Mandal, 1999b]. This model can be used to explore how quality methods impact on the various dimensions of a SME, viz:

- **Core** - products and/or services
- **Structural** - size, location, age, ownership, legal entity/structure
- **Fundamental** - people, systems, measurement
- **Sustainability** - leadership, planning, risk, change, technology, innovation
- **Integrative** - customers, suppliers, partners
- **External** - competition, stakeholders, government, economy

**Quality Methods** are numerous by definition, as indicated previously, and by application. These methods are underpinned by various principles and theories, which include: waste reduction, variation reduction;
causation (systemic versus sporadic); continuous improvement; supply chain drivers; quality cost reduction; internal customer concept ... and so on. An examination of the more commonly known quality methods provides a division into six dimensions:

- **Broad Systemic Methods** - eg total quality management (viz Business Excellence Framework or Quality Awards, TQM, TQC, CWQM etc); benchmarking; best practice; business process re-engineering; just-in-time; quality costs; total productive maintenance; ISO 9004.1
- **Narrow Systemic Methods** - eg quality system (ISO 9001, 2 and 3 - 1994 and ISO 9001-2000); quality system certification; Q-Base; Business Growth Through Quality; Core Program; Interpretive Standards (AS4500, ISO/TC176 Guide); Industry Association or Industry Specific Programs
- **People / Team Methods** - eg team building; training and education; team roles and definition
- **Problem Solving / Investigative Methods** - eg process flow charting; cause and effect charts; brainstorming; checksheets; Pareto charts; scattergrams; design of experiments; histograms; reliability and maintainability; failure mode and effects analysis; fault tree analysis
- **Product / Process / Service Methods** - eg product or process standards; industry standards or practice; statistical process control; run charts; acceptance sampling (attribute/variable); calibration; measurement system analysis; process capability; liability/safety/loss prevention; design control; quality control; supplier controls
- **Customer Orientation Methods** - eg quality function deployment; SERVQUAL

The **Moderators** influence the effectiveness of driver(s), organisational context and the quality method(s) used. The dimensions relate to directly to the people involved (SME owner/operator/manager and employees) and include:

- **Communication**
- **Understanding**
- **Commitment**

The **Outcomes / Impacts** are the results of the relationships between the Drivers, Organisational Context, Quality Methods and as they are impacted by the Moderators. Overall, some change in customer focus and/or organisational well-being for the SME.

The theoretical framework underpinning the variables described above is diagrammatically expressed in Figure 1.

**Research Approach**
The research framework presents a number of propositions that can be explored and tested further. The main propositions are:

1. The drivers of quality methods in SMEs are related to the organisational context and quality method used, which results in a change in customer focus and/or organisational well-being.
2. The drivers, organisational context and quality method used are moderated by communication, understanding and commitment.
3. A change in customer focus and/or organisational well-being is dependent on the drivers, organisational context, quality method used and any moderating effects of communication, understanding and commitment.

In order to further develop the basis of the propositions, a three stage research approach covering focus groups, cross-sectional survey and case studies has been devised and enables testing of construct validity, internal validity and external validity [Sekaran, 1992]. The three stage research approach is set out in Figure 2.

A mail survey method was selected as the preferred means of collecting base data for the research, providing an optimum balance between time, cost and sample coverage. [Lockart, 1984; Mangoine, 1995].

The main aims of the focus groups are to (1) ensure the approach is able to be easily communicated, and (2) provide input into the development of the research framework and mail survey. The focus groups of between five to eight people will comprise SME owners/operators/managers, quality professionals and other stakeholders. It is envisaged that up to three focus groups will be convened.

Further development of the survey instrument will depend on the outcome of the focus groups. The sampling method will be based on a stratified random sample of SMEs, and will comprise of a sample pilot study, followed by a sample of businesses throughout Australia. The data analysis methods for the data collected from the survey will involve non-parametric and parametric tests (eg possibly factor analysis, multiple regression and/or canonical analysis).
The case studies will concentrate on the time dependent effects of the various dimensions being examined.

It is anticipated that several problems may evolve as the research continues and as a result of the research outcomes, such as parsimony, response rate, influencing existing paradigms and effective promotion of the research outcomes. None of these problems is insurmountable. Yet, they do present potential impediments to the research and will be borne in mind throughout its conduct.

5.0 Conclusion

The research being undertaken, here, is largely pure research and very much exploratory in nature. Its significance in terms of contributing to the current body knowledge is high due to:

- Current empirical studies and knowledge in this area are limited.
- Australian SMEs represent a significant proportion of Australian business and industry.
- Quality methods currently lack clear definition and are not categorised in any easily recognisable forms (ie apart from some specific methods).

The continuation of this research is important in terms of providing tangible outcomes that explain the relationship between quality methods and Australian SMEs. More importantly, it will contribute significantly to understanding the current and future role of quality methods in this important sector of Australia’s economic infrastructure.

References


