Experiences of Australian firms in implementing ISO 9001: A comparison of the 1994 and 2000 versions

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ABSTRACT

This paper investigates the experiences of Australian firms in implementing ISO 9001, comparing the 1994 and 2000 versions. The survey data was taken from a sample of 326 Australian firms encompassing both manufacturing and service sectors. Six key findings have been identified from the study. In general, there is no significant difference between the two versions of ISO 9001 with respect to the firms' reasons for seeking certification and their approaches to implementing the international standard. That said, it took firms relatively less time to attain certification with ISO 9001:2000 than it did to attain certification to the 1994 version. More interesting is the significant difference between the ISO 9000 versions in terms of their implementation difficulty, with firms reporting that the 2000 version was easier to implement. Another interesting result is that the 2000 version was perceived by firms to have made less impact, than did the ISO 9001:1994. Finally, and perhaps on a more positive note, firms indicated that they experienced few difficulties in transitioning from the 1994 version to the 2000 version.

Key words: ISO 9001, reasons, implementation, impacts, difficulties, transition

INTRODUCTION

The ISO 9000 series of quality standards was developed by the International Organization of Standards (ISO) in 1987, and has since become the international quality standard. The standard went through a (minor) revision for the first time in 1994, and since this time, there have been many studies conducted on the 1994 version of ISO 9000. A second revision took place in the end of 2000, and this time the changes were quite fundamental with a clear orientation towards the "process approach" to management and an emphasis on "continual improvement". In essence, there was a radical change in the approach taken to quality and, consequently, a completely different philosophy to evaluate compliance to the standard. Despite the above significant changes to the ISO 9000, from both philosophical and technical aspects, a preliminary literature search, conducted by this author, indicated that, to date, very few studies (e.g. Bendell and Boulter, 2004; Bhuiyan and Alam, 2004; Casadesus and Karapetrovic, 2005; Liebesman and Mroz, 2002) have been conducted on ISO 9000:2000 and none of these were carried out in the Australian context.

The aim of this study was to directly address this aforementioned literature gap and compare the experience of Australian firms which were firstly certified to ISO 9000:1994 and those certified to ISO 9000:2000. To achieve this aim, this study focuses targets three primary areas of comparison:

motives for certification, benefits of implementation, and difficulties experienced during implementation. Additionally, this study examines the ease by which companies transitioned from the ISO 9001: 1994 to ISO 9001:2000, using a sub-sample of firms who had experience with both.

LITERATURE REVIEW

Over the last two decades, there has been a steady increase in the number of countries who have adopted ISO 9000 as their national quality standard, as well as a continual increase in the number of companies who certify to the standard, within these countries. Since its advent, ISO 9000 has also been a common research topic within management journal. Some of the more notable themes within these studies pertain to company's motives for and benefits of ISO 9000 implementation, as well as the key success factors. ISO 9001 is one of the basic standards in the ISO 9000 family which contain the quality management systems requirements. Firms which adopt ISO 9001 can have their quality management system assessed and upon compliance to the requirements of the standard, the firms are granted ISO 9001 certification.

Despite its widespread acceptance, however, ISO 9000 has been the brunt of several criticisms, the most notable of these relating to the perceived cost/benefit ratio of implementation (Terziovski, et al., 1997; Lee and Palmer, 1999). In response to this particular issue, the International Organisation for Standardisation (ISO) published a new series of ISO 9000 standards on 15 December 2000. The ISO 9000:2000 is now based on eight quality management principles, which are thought to reflect best management practices. These include ,customer focus, leadership, people involvement, process and system approaches to management, continuous improvement, factual approaches to decision making, and mutually-beneficial supplier relationships (ISO, 2000). Other major improvements on the earlier version include: change in focus from activities that impact the product to all organisational activities that serve to satisfy the customers; simplification of the structure from twenty elements down to five elements, and the downsizing of the requirements from 323 requirements down to 250 (Hoyle, 2000)).

The ISO 9001:2000 standard also reduces the many standards within the ISO 9000:1994 series standard, merging the ISO 9001, ISO 9002 and ISO 9003 versions into one standard. ISO 8402:1994 that contains vocabularies related to quality system and part of the content in ISO 9000-1 that contains

guidelines for understanding ISO 9000 family is now incorporated into a new ISO 9000:2000 standard. ISO 9004-1 which contains the guideline for quality management system for internal use has also been transformed into a new ISO 9004:2000 standard for a similar purpose.

The changes made to the 2000 version have invited several positive comments which could lead to an increasing number of ISO 9000 adopters as well as enhance the satisfaction of current adopters. For example, the eight principles embedded in the standard demonstrate that ISO 9000 is now more compatible with TQM philosophy (Magd and Curry, 2003). The intent of the standard has also changed, now primarily focused on customer satisfaction rather than quality assurance; on defined objectives rather than procedures; and on continuous improvement rather than the correction of errors (West, 2002).

Despite these improvements, Laszlo (2000) suggested that companies may face several difficulties as a result of the significant changes in the requirements of the new version of ISO 9000. The first of these issues relates to compliance difficulties, particularly because of the cultural gap between the new approach required as compared to the previous 1994 version. Specifically, Laszlo argues that companies need to move away from a quality assurance mindset, which is dominated by a “check-list” mentality, into a quality management mindset, which focuses more on strategic thinking and continuous improvement. Laszlo’s concerns, however, may be lessened by the results of a more recent study, which examined ISO 9001:2000 implementation amongst a number of U.S companies. Results indicated that although the companies reported experiencing some degree of difficulty with the additional requirements of the new version (e.g. customer satisfaction data and analysis), they also reported having benefits in these same areas (Liebesman and Mroz, 2002).

As well as examining the effect of changes in the ISO 9001 requirements, a small number of studies have compared the two ISO 9001 versions in terms of their implementation. The longitudinal studies by Bendell and Boutler (2004) among UK firms, Casadesus and Karapetrovic (2005) among Spanish firms, and Bhuiyan and Alam (2004) in North America are most notable, having all tracked from several databases so far. As mentioned previously, however, very few studies exist within the Australian context, an omission that this study will attempt to rectify by incorporating key issues

related to ISO 9001 implementation and providing empirical information from Australian perspectives.

RESEARCH QUESTIONS

To meet the objectives of the study, six research questions were posed, with the first five focusing on differences in the experiences of firms in the implementation of ISO 9001 between 1994 and 2000 version. These five questions were:

- Motives or reasons for seeking certification?
- Implementation approaches?
- How long it took for implementing the standard and attaining certification?
- Internal and external impacts of the implementation of the standard?
- Major difficulties experienced by firms in implementing the standard?

The implications of the above five research questions are not only based on the different version of ISO 9001, but also related to the differences in the experiences of early and late adopters of ISO 9001 (Naveh et al., 2004). From a theoretical perspective, the differences can occur as the early adopters would benefit more than the late adopters; on the other hand, the late adopters would experience less problems in the implementation process after learning from the experiences of early adopters.

The sixth question is focused on the transitioning processes experienced by firms which had to convert from the 1994 version to the 2000 version.

DATA COLLECTION

This study was conducted by Monash University, Department of Management, in collaboration with Joint Accreditation System – Australia and New Zealand (JAS-ANZ). Companies were selected for participation from a JAS-ANZ database, which lists all companies that are certified to ISO 9001. Of a total of 10,015 companies, 1,300 companies were selected on the condition that they were based in Australia and their listing in the database included complete information regarding the company's name, postal address, as well as providing a contact person complete with name, phone number and email address. The latter items were important so as to allow for a follow up/reminder letter to be sent

to all participating companies. Upon selection, each company was sent a questionnaire, and asked to pass it to the manager who had knowledge and responsibility for the implementation and maintenance of the company's quality system. In total, 328 questionnaires were returned, of which four of them were considered unusable due to excessive missing values. The usable responses constituted a 25% response rate.

Profile of the respondents

The sample company's, most simply, can be broken up into two overarching categories: manufacturing and non-manufacturing (approximately 50/50). The manufacturing sectors capture most sectors under the ANZIC code, including food, textile, wood, printing, mineral, metal, and machinery. In terms of organisational size, two-thirds of the sample was made up of small to medium sized companies with 50% of the firms employing less than 50 people. 22% of the firms employed between 100 and 500 employees and the remaining 10% of firms employed more than 500 people. With regards to the positions of these respondents, the large portion was dominated by middle to senior level managers with 39% being quality managers, 18% being production/operations managers, 13% being managers from different areas, including human resources and finances, and 16% being directors, CEOs or general managers. Only 5% of the respondents did not have managerial positions in the firms. This sample proportion is highly appropriate given the objectives of this study.

KEY FINDINGS

The proportion of firms firstly certified to ISO 9000:1994 and ISO 9000:2000

Out of 326 respondents, 219 firms were initially certified to ISO 9001:1994 and 107 were firstly certified to ISO 9001:2000. Out of the 219 firms, 26 firms were initially certified to ISO 9001:1994. This could be primarily because firms were given a leeway to keep the certification of the 1994 version until the three-year transitional period passed, that was on December 2003.

Motives for certification

Motives for seeking certification have been one of the most topical issues in the studies on ISO 9000. Table 1 provides a pair-comparison on several major reasons for implementing the international standard between 1994 version and 2000 version. Most of the items do not show significant different

except for “matching competitors’ actions” which indicate a declining trend from 1994 to 2000 version. This result is sensible given the large number of firms which have been certified to ISO 9001 across industries, hence, the decision to pursue certification is not likely to be driven by specific competitors.

Literature on ISO 9000 studies has distinguished internal motives from external motives. The results in Table 1 indicate that the top three reasons are external, namely enhancing company’s image, meeting customer demands, and gaining preferred supplier status. This, however, is not matched with access to international markets which sits in the bottom score of the list. The top three internal reasons show a close connection to each other. By implementing ISO 9000, companies aim to establish better control of operations of the business and provide a foundation for continuous improvement as part of their strategy for pursuing quality.

Table 1 Reasons for seeking ISO 9001 certification

Primary motive/ reason for seeking certification	ISO 9000: 1994	ISO 9000: 2000	Δ Mean
To meet customers demands	4.11	4.19	.07
To match competitors’ actions	3.27	2.85	.42*
To enhance the company’s image	4.23	4.28	.05
To gain preferred supplier status	4.02	3.81	.21
To comply with industry policies or regulations	3.37	3.34	.03
To combat poor quality performance	2.91	2.93	.02
To have better control of operations of the business	3.73	3.79	.06
To provide a foundation for continuous improvement	3.82	3.93	.11
To reduce manufacturing operating costs	2.79	2.64	.15
To realise the company’s strategy for pursuing quality	3.66	3.79	.13
To provide access to international markets	2.66	2.47	.19
To minimise the risk of product liability	3.25	3.07	.18

* $p < .05$

The non-significant difference in the majority of the reasons for seeking certification is noteworthy. In particular, the strong external reasons among companies who were certified to ISO 9001:2000 seem to contradict the idea that ISO 9000 has no longer has any external value as most competitors in the industries that require ISO 9000 registration are already certified (Casadesús and Karapetrovic, 2005). On the other hand, this result strongly indicates that customers’ demand for firms to be certified to ISO 9001 – which has been noted in literature (Carlsson and Carlsson, 1996; Jones et al., 1997; Williams, 2004) - is sustainable.

Implementation process

The implementation process of ISO 9000 has been noted as the critical factor in determining the benefits gained by the firm (Hughes et al., 2000). Several key practices in implementing ISO 9000 are presented in Table 2 with most of them showing non-significant differences between the 1994 and 2000 versions. The exceptions are applied on assigning particular staff members to manage the quality system of the firm and engaging consultants during the implementation process which show an incremental trend between the 1994 and the 2000 versions.

Assigning a special project team to implement the standard, appointing particular staff to manage the quality system, and training employees on the concepts of quality and quality system show the highest relative scores which indicate that human factors received the highest attention in the implementation process. Surprisingly, the leadership role of senior management scores just below the mid-point (i.e. 3) despite strong arguments in literature that emphasise its importance (Jabnoun and Al-Ghasayah, 2005). However, this reflects the difficulties experienced by firms in winning senior management's commitment to quality management, as has been highlighted in literature (Bettie and Sohal, 1999). Therefore, beyond assigning particular staff to oversee quality systems, senior management do not perceive a need to get involved in the implementation of ISO 9001. This indicates that quality system is still perceived as a "stand alone" element rather than an integral part of daily business operating system. Therefore, the incremental trend in assigning particular staff for managing quality system between the 1994 version adopters and the 2000 version adopters seems not to indicate that firms have become more serious in the implementation process of ISO 9000; rather firms now tend to isolate quality system in its operations.

In conjunction with the above point, the findings in Table 2 indicate that companies do not strongly intend to go beyond implementing the basic requirements of ISO 9001. Pursuing business excellence and implementing complementary programs such as TQM, Continuous improvement, and Six Sigma only receive moderate attention, and using ISO 9000 as a starting point to pursue other standards (most notably are ISO 14001 and OHASAS 18001) receives only low attention. This is particularly

interesting since one of the aims of the 2000 version is to allow firms to integrate ISO 9001 and ISO 14001 (Matias and Coelho, 2002).

Table 2 Approaches for implementing ISO 9001

Implementation Processes	ISO 9000: 1994	ISO 9000: 2000	Δ Mean
Assigned a particular staff member (or department) to manage the quality system and its compliance with ISO 9000	4.12	4.39	.27*
Senior management was actively involved and took a leadership role during the implementation of ISO 9000	2.85	2.79	-.05
Sufficient resources (e.g. time, funds, facilities, personnel) were provided to support the implementation process	2.64	2.49	-.15
Company's quality policy, objectives, and procedures were explained clearly to all employees	3.88	3.76	-.12
Documentation was developed by corresponding staff instead of relying upon external consultants	3.54	3.60	.06
All employees were trained in total quality concepts and ISO 9000 requirements during the implementation process	3.99	4.06	.07
Engaged experienced consultants to help us develop the quality system and comply with the requirements of the standard	3.87	4.09	.22*
A special project team was established and assigned to implement ISO 9000	4.21	4.28	.07
Aim at improving our operating and business system beyond the requirements of ISO 9001	3.49	3.61	.12
Use ISO 9000 as a starting point to pursue other standards	2.49	2.47	-.02
Sought advice and information from other companies which have been successful in implementing ISO 9000	3.07	2.76	-.30
Implemented ISO 9000 in parallel with other quality management programs	3.23	3.33	.10

* $p < .05$

The integrated quality - environmental system can bring a number of benefits, including cost reduction due to improvement in data management (i.e. simplification and rationalisation of records) and personnel management (e.g. training), homogeneity in management methodologies, a decrease in the bulk of company papers and the creation of common forms that can be more easily used by employees (Renzi and Cappelli, 2000). The findings therefore indicate low awareness of this issue among the respondents.

Time for implementing ISO 9001 and attaining certification

Table 3 presents the average length of time spent by firms to implement ISO 9001 requirements until they attained certification. It appears that it took average of 2 months lesser time to implement the 2000 version than the 1994 version (significant at $p < 0.05$).

Table 3 Time for achieving ISO 9001 certification

	ISO 9000: 1994		ISO 9000: 2000	
	Mean	Range	Mean	Range
Time for achieving ISO 9001 certification (in months)	10.26	1 - 36	8.15	2 - 24

Intuitively, this may suggest that the new version is simpler to be implemented, which was intended by the new version. The more integrated elements of the standard should lead firms to address the requirements in a more efficient way which would save significant amount of time. The other possible reason is the maturity of knowledge on strategic implementation approach of the standard through publicity of books or tool kits which are publicly accessible.

The internal and external impact of ISO 9000

Similar to motives, the benefits obtained from ISO 9000 implementation certification can be divided into internal and external benefits. Internal benefits, on the other hand, are concerned with internal processes and structures of organisations, such as improved productivity and efficiency. External benefits are those concerned with firms' status in the market, particularly in relation to a better reputation by becoming certified firms. Table 4 presents the relative impacts of ISO 9001 implementation on six areas. The first four areas are internally oriented which include people management (3 items), process management (3 items), customer relationships (3 items), supplier management (3 items). The other two areas are externally oriented which include competitive performance (3 items), and business performance (3 items).

Process management shows the highest scores, followed by customer relationships and people management. This result is expected since the focus of ISO 9001 is focused on managing process to produce consistency of the outputs to satisfy customer needs using resources, including people. This, however, is not matched by supplier management which shows a relatively lower impact derived from ISO 9001 implementation.

Both measures of performance indicators (i.e. competitive and business) also show only moderate or less score, and these results confirm what most studies revealed that more internal benefits were

realised than external ones (Beattie and Sohal, 1999; Buttle, 1997; Carlsson and Carlsson, 1996; Gotzamani and Tsiotras, 2002; Huarng et al., 1999; Lee, 1995; Taylor, 1995; Vloeberghs and Bellens, 1996).

Table 4 Internal and external impacts of ISO 9000 on organisational practices and performance

Internal and external impacts	ISO 9000: 1994	ISO 9000: 2000	Δ Mean
People management			
Providing foundation for training and education	3.57	3.57	.00
Enhancing confidence and effectiveness in performing tasks	3.41	3.38	-.04
Enhancing employee satisfaction towards the workplace	2.98	3.08	.10
Process management			
Establishing corrective and improvement mechanism of processes	4.06	4.07	.01
Enhancing the consistency of the way processes are performed	4.00	4.03	.03
Improving process capability in conforming to specifications	3.38	3.50	.12
Customer relationships			
Enhancing confidence of customers on our company's capability	3.68	3.46	-.22
Enhancing customer service and complaint handling	3.58	3.34	-.23
Enhancing customer satisfaction and reducing disputes / complaints	3.19	2.74	-.44**
Supplier management			
Developing long term partnership with suppliers for mutual benefits	3.12	2.91	-.21
Developing collaboration with suppliers in product design	3.00	2.94	.06
Consolidating the number of suppliers per material or component	2.69	2.56	.13
Competitive performance			
Product performance	3.40	3.09	-.31*
Price competitiveness	2.58	2.38	-.20
On time delivery	3.20	3.16	-.04
Business performance			
Sales	3.01	2.64	-.37**
Profitability	2.76	2.52	-.24
Market share	2.91	2.52	-.39**

* p<.05, ** p<0.01

Comparing the relative scores between the 1994 and 2000 versions, it is interesting to see that most elements show declining trends (i.e. minus sign), particularly concerning customer relationships, competitive performance, and business performance, although some of them failed to pass the minimum statistical significance test (i.e. p<0.05). At a glance, these results may suggest that the 1994 version yielded relatively larger benefits to its adopters than did the 2000 version. However, given that all firms have now been converted to ISO 9001:2000 in the last three years, the author is more inclined to relate the results to the lagging effect of ISO 9001 implementation on organisational practices and performance. Therefore, early adopters (in this case the adopters of 1994 version) will enjoy relatively

larger benefits from the standard than the later adopters, hence, contradicting the findings of Jones et al.'s (1997) study.

Difficulties in ISO 9001 implementation

The analyses of difficulties encountered by firms in implementing ISO 9001 were focused on three potential differences. First, the differences of difficulties between the two versions of ISO 9001 were examined from the perspectives of the firms which had experienced both versions. Second, the differences in difficulties between the two versions of ISO 9001 were examined by comparing the perspectives of the firms which were certified to the 1994 version and those who were certified only to the 2000 version. Third, the difficulties in implementing the 2000 version were examined by comparing the perspectives of the firms which were initially certified to the 1994 version before converting to the 2000 version and those who were first certified to the 2000 version.

Table 5 Difficulties in Implementing of ISO9000

Difficulties in implementing ISO 9000	ISO 9000: 1994	ISO 9000: 2000 ^{a)}	ISO 9000: 2000 ^{b)}	Δ Mean
Understanding the principles behind the standard	2.93	2.40	2.51	1-2** 1-3**
Understanding the applicability of the requirements	3.05	2.48	2.67	1-2** 1-3**
Dealing with the vagueness of the standard	3.17	2.56	2.84	1-2** 1-3* 2-3*
Documenting manual procedures	3.16	2.35	2.68	1-2** 2-3*
The volume of paper work	3.81	2.80	3.08	1-2** 1-3**
High costs	3.38	2.67	2.95	1-2** 1-3**
Time consuming	3.84	3.02	3.44	1-2** 2-3**
Providing adequate resources	3.40	2.80	3.06	1-2** 1-3*
Balancing with other priorities	3.62	3.12	3.40	1-2**
Staff or employee resistance	3.04	2.30	2.60	1-2** 1-3**
Changing company practices to fit the standard	2.94	2.16	2.26	1-2** 1-3**
Changing organisational structure	2.41	1.93	2.00	1-2** 1-3**
Dealing with external consultants	2.41	1.79	1.96	1-2** 1-3**
Dealing with external auditors/ assessors	2.76	2.09	2.05	1-2** 1-3**

^{a)} These firms were initially certified to 1994 version before being converted to 2000 version

^{b)} These firms were certified to 2000 version from the beginning

* p<.05, ** p<0.01

As presented in Table 5, firms who were certified to both versions experienced significantly less difficulties with the 2000 version compared to the 1994 version. This result is important as it confirms the intent of the revision of ISO 9001; that is to simplify its implementation. Comparing the experience of firms which were initially certified to the 1994 version and those which were initially certified to the 2000 version, the results indicate that the implementation of the 2000 version brought

significantly less difficulties to firms compared to the 1994 version. This result is also important as it suggests the 2000 version, in itself, is easier to implement than the 1994 version. With regards to the implementation of the 2000 version, firms which had been certified to the 1994 version experienced less difficulties compared to those who were first certified to the 2000 version. This suggests the importance of learning from experience with ISO 9001.

Difficulties in transitioning to ISO 9001:2000

The major potential difficulties for companies are listed in Table 6. In general, there is no major concern relating to the transition process. None of the seven items show an average score more than 3 (i.e. medium). Revising documents has the highest score, and this is quite understandable given that ISO 9000 is document-based.

Table 6 Difficulties in transitioning to ISO9001:2000

Difficulties in transitioning to ISO 9001:2000	Mean
Revising documents	2.47
Increasing complexity of the scope and details of the requirements	2.31
Increasing complexity in auditing processes	2.19
Re-training people on the new version	2.16
Increasing paper works	2.10
Changing company practices to suit the new version	2.00
Additional costs in engaging external consultants	1.99

The low score of additional burden of paper works is associated with the low scores of changing company practices and re-training people. This is confirmed by the low scores of additional costs in engaging consultants and the complexity of auditing processes, confirming the findings of the previous study (Liebesman and Mroz, 2002).

CONCLUSION

By and large, it can be inferred that the revision of ISO 9001 has brought several expected benefits. First, it has lessened the difficulties in the implementation process which could be related to the fact that it takes a shorter time for firms to implement the 2000 version than the 1994 version. Secondly, it does not create problems for firms when converting from the old version to the new version. The analyses presented on this paper are limited to descriptive statistics. Further analyses will examine the relationships between variables incorporated in the study, particularly the chain of relationships

between reasons, implementation approaches, and benefits realised in the firms. This would provide further insights into how this international standard affects the practice and performance of firms that adopt it.

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