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An Empirical Taxonomy of ISO 9000 certified organisations: service and construction industries

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Abstract:

ISO 9000 research focuses largely on manufacturing sector ignoring service and construction industries. Research studies often assume that findings from manufacturing can be generalised for other sectors. The result is a poor understanding of differences between sectors including taxonomies of quality management systems. Based on the data collected through a survey of 213 service and construction firms and using standard cluster analysis procedure, a taxonomy was developed based on the relative importance attached to 12 motivations for ISO 9000 certification. We have identified four clusters named Proactive Organisations, Quality Focused Organisations, Opportunity Taking Organisations and Coerced Organisations. Two underlying dimensions were identified that distinguish the ability to benefit from ISO 9000 certification – strategic focus and coercive pressure experienced by these organisations. The paper contrasts the results with findings from manufacturing sector.

1. INTRODUCTION

Certified management systems such as ISO 9000 became a cornerstone of global economy. Indeed, ISO Survey (2006) has reported 897866 certified organisations against ISO 9000 in 170 economies. Given this interest, what motivates these organisations to get certified with ISO 9000? Can the different motivations be classified into differentiable subgroups? What are these subgroups and what are their characteristics? What are the performance outcomes of these subgroups?

Over the last two decades, numerous studies aimed to answer some of these questions – either specifically related to ISO 9000 or in more generic terms aimed at the investigation of quality management systems (QMS) in general. (Poksinska et al. 2003) assert that organisational motivations include internal (i.e. operational improvements, cost reductions) and external factors (i.e. corporate image, marketing advantage). Another angle suggests that organisations are driven by normative, mimetic and coercive forces to get certified (Guler et al. 2002). Several studies have also mapped various developmental stages of QMS and provided taxonomies of these systems. Ho and Fung (1994) suggest a staircase progression from operational focus (5S, Total Productive Maintenance) through certification focus (ISO 9000) toward business excellence focus. A similar taxonomy was proposed by Kim et al (1997). In yet another empirical work, Yeung et al (2003) identified four stages: underdeveloped, framed, accommodating and strategic. Similar taxonomies were also identified and echoed in practitioner based literature (Oakland, 2003).

Despite this effort to empirically describe this area, the studies have acknowledged several limitations. Firstly, most of the studies draw their data from

manufacturing firms. Consequently, the conclusions about ISO 9000 are often generalised based on the data from manufacturing sectors largely ignoring specifics of other sectors. A little attention has been paid to map current situation in service and construction sectors and as Yeung et al (2003) specifically pointed out, an investigation of taxonomy of QMS in these sectors is needed. Secondly, research studies provided taxonomies of quality management systems yet not specifically taxonomies of certified management systems (CMS). And thirdly, available taxonomies provide a staircase progression. This approach acknowledges that an organisation progresses from lower to higher levels of maturity of QMS. Whilst helpful for the description of QMS, CMS have a clear cut-off point in terms of their maturity: certification. Hence, a valuable and helpful taxonomy for CMS would consider this specific feature. Therefore, in our research we aim to close this gap and provide a taxonomy of ISO 9000 certified organisations in service and constructions sectors. Specifically, we want to investigate, whether there exists a taxonomy of motivations to get certified with ISO 9000, whether the different motivations be classified into differentiable subgroups; what are these subgroups and what are their characteristics and how it relates to performance outcomes.

We have used a survey questionnaire and collected the data from 213 New Zealand certified organisations from industry sectors ANZ SIC 36 -97 (all industries excluding manufacturing). Using cluster analysis, a taxonomy was developed based on the relative importance attached to 12 motivations for ISO 9000 certification. We have identified four clusters named Proactive Organisations, Quality Focused Organisations, Opportunity Taking Organisations and Coerced Organisations. Two dimensions were identified that distinguish the ability to benefit from ISO 9000 certification – strategic focus and coercive pressure experienced by these organisations.

Our study expands the previous work by mapping the status quo of ISO 9000 approached in service and construction industries. The study highlights the importance and positive effect of strategic focus in the adoption of ISO 9000 in organisations and the presence of coercive pressure experienced by some organisations. Strategically focused organisations benefit from ISO 9000 none withstanding the presence or absence of coercive pressure to get certified.

2. LITERATURE REVIEW

What motivates organisations to seek ISO 9000 certification? Numerous studies offer various explanations. Many studies applied a neoinstitutional theory and argued that the forces behind the ISO 9000 are coercive, normative and mimetic. (Guler et al. 2002) assert that “states and foreign multinationals are the key actors responsible for coercive isomorphism, cohesive trade relationships between countries generate coercive and normative effects and the role-equivalent trade relationships result at learning based and competitive imitation”. Other studies confirmed these tenets yet also asserted the dynamic dimension of this matter. For instance, (Corbett 2006) describes the coercive nature of certification in global supply chains. Corbett’s (2006) research asserts that coercive pressure explains the early diffusion of ISO 9000 whilst later adoption can be described through traditional diffusion mechanisms. (Naveh et al. 2004) assumed that the motivation of first movers would be to improve internally (technical efficiency) whilst second movers would implement ISO 9000 due to customer pressure and the fear of falling behind the competition (external pressure). However, Naveh et al’s (2004) empirical study concludes that learning is more important factor than timing in explaining ISO 9000 performance.

Indeed, many studies distinguish between internal and external motivations to seek ISO 9000 certification and link motivations to actual performance of organisations (Martinez-Costa et al. 2007; Naveh and Marcus 2005; Poksinska et al. 2003; Terziovski and Power 2007). For instance, (Martinez-Costa et al. 2007) highlight the link between

internal motivation and higher performance. Similarly, (Naveh and Marcus 2005) found out that daily usage and using ISO 9000 as a catalyst for change is linked to better operational and business performance. Terziovski and Power (2007) assert that ISO 9000 certification can deliver significant business benefits if it is implemented as part of a continuous improvement strategy.

The conclusion from these studies is twofold. Firstly, the studies do agree that organisations adopt ISO 9000 due to internal and/or external motives. Internal motives include quality improvements, improvements of quality culture or facilitation of learning and change through ISO 9000. External motives encompass areas such as marketing advantage, customers requiring the certification or improvement of corporate image. Secondly, the studies conclude that only organisations that implement ISO 9000 as a learning mechanism and change management tool reap the benefits of having a certificate.

Many studies aimed to establish taxonomies or typologies of quality management systems (QMSs) (Ho and Fung 1994; Yeung et al. 2003). These studies maintain that there exists a progression from underdeveloped management system toward highly mature strategic QMSs. Typically, a step wise progression is offered with a description of typical practices at each level (Kim et al. 1997). For instance, Yeung et al (2003) offer the following progression. First category encompasses organisations with “underdeveloped quality systems”. Typically, these organisations focus on safeguarding procedures and preventing non-conformance products from reaching their customers. At the next stage, organisations focus on control or prevention of non-conformance and at meeting specifications or contractual requirements (framed management systems). Accommodating quality systems, in comparison to FMS, tend to improve on time-based operational performance, whilst the ultimate stage (strategic management systems) fully embeds decision making into QMSs and enjoys better organisational performance overall.

These studies are quite useful for the discussion and research of ISO 9000 taxonomy. ISO 9000 indeed specifies a quality management system model. However, in comparison to QMS, ISO 9000 represents a certified management system (CMS). CMS is different as it specifies a set of requirements and a threshold to be reached. Hence, organisational maturity of organisations with CMS differs. Consequently, taxonomies of these organisations will be different and a step-wise progressive model may not capture the nature of the problem. For instance, organisations may benefit from the certification even if they do not have a highly mature quality management system. Taking this viewpoint, (Terziovski and Power 2007) (based on (Terziovski et al. 1997) have provided a four quadrant model for ISO-certified organisations. Terziovski and Power’s (2007; p.147) model has two dimensions: conformance (immature quality culture versus strong quality culture) and performance (weak benefits from certification versus strong benefits from certification). Terziovski and Power (2007) conclude that organisations can still enjoy benefits from certification even if they have an immature quality culture.

Yet no studies so far have investigated a taxonomy of organisations based on their motivations to get certified and link it to the benefits these organisations gain from the certification. So far, we have argued that the motivations can be divided into internal and external. We therefore propose the following hypothesis:

H1 ISO 9000 certified organisations can be classified into groups based on their motivations to seek the certification

We have also demonstrated in the literature review that motivations to seek ISO 9000 certification are indeed linked to different performance outcomes and perceived benefits from ISO 9000 certification (Martinez-Costa et al. 2007; Naveh and Marcus 2005;

Terziovski and Power 2007). The studies have demonstrated that organisations that use quality management systems to enhance their learning and as a catalyst for change, find ISO 9000 certification beneficial. In line with these findings, we hypothesise that different taxons will have distinguishable levels of benefits from ISO 9000 certification. Hence our next hypothesis:

H2 Based on a taxonomy of ISO 9000 certified organisations (H1), different taxons will have different benefits from ISO 9000 certification.

3. RESEARCH METHODOLOGY

3.1. The Sample

To test our hypothesis, we have used a survey questionnaire that collected the data about organisations' motivations and benefits from certification. The questionnaire was sent to 1774 companies in New Zealand (these are all companies that were certified against ISO 9000 in New Zealand in 2006). The list of companies was obtained from the Joint Accreditation System of Australia and New Zealand (JAS-ANZ) and further clarified with accreditation bodies in New Zealand. As we did not have an accurate sector specific data, we sent the questionnaire to all companies and then picked up only service and construction companies. We have received a total of 422 valid responses (24% response rate) and a total of 213 responses from industry sectors ANZ SIC 36-97 (all industries excluding manufacturing). Table 1 provides respondents' profile statistics.

Table 1 Respondents' Profile Statistics

	Industry Division (Code)	Frequency	Percent
D (36-37)	Electricity, Gas and Water Supply	11	5
E (41-42)	Retail Trade	4	2
F (45-47)	Transport and Storage	23	11
G (51-53)	Construction	44	21
I (61-67)	Wholesale Trade	22	10
J (71)	Communication Services	5	2
J (73-75)	Finance and Insurance	2	1
L (77-78)	Property and Business Services	77	36
M (81-82)	Government Administration and Defence	7	3
N (84)	Education	3	1
O (86-87)	Health and Community services	10	5
P (95-97)	Personal and Other Services	5	2
	Total	213	100
	No of employees at the facility	Frequency	Percent
	1-19	63	30
	20-99	90	42
	100-499	50	23
	500-999	5	2
	1000-4999	2	1
	Total	210	99
	Missing System	3	1
	Total	213	100

The questionnaire was addressed to a single respondent with a leadership role in ISO 9000 system in our sample of organisations. We have chosen this approach as numerical taxonomies are best developed from large samples (Miller and Roth 1994) and also

because high ranking respondents tend to be more reliable sources (Miller and Roth referring to (Phillips 1981). Information provided in the survey indicated that 19% were quality mangers; 33.8% middle managers and 42.4 % top managers. No significant mean differences were found between these groups. We have also carried out a non-response bias test between early and late respondents (first two weeks versus responses received from the third week on-wards). A t-test of difference have not shown any statistically significant difference at $p < 0.05$.

3.2. The instrument

There is a plethora of instruments that mapped motivations and benefits from ISO 9000. Hence, following the advice of (Malhotra and Grover 1998), we have used previously tested instruments to conduct our research. To measure motivations for seeking ISO 9000 certification we have employed Corbett's (2006) instrument. This instrument was also used in (Pan 2003) and showed high robustness. None withstanding this, we have pre-test the instrument with several managers and found the instrument usable. We have also investigated whether multicollinearity was a concern and after conducting several robust checks we found the instrument robust. Details about motivations to seek ISO 9000 certification are provided in Table 2. Each item was measured on a five-point Likert scale (1=not important at all; 5=extremely important).

Table 2 Instrument's details (Motivation to seek ISO 9000 certification)

Motivation

Continuous success dependent upon ISO 9000
 cost reductions
 quality improvements
 marketing advantage
 customer pressure / customer demands
 many competitors were already ISO 9000 certified
 benefits experienced by other certified companies
 avoid potential export barrier
 capturing workers' knowledge
 relations with authorities
 relations with communities
 corporate image

Benefits achieved from ISO 9000 were measured by three constructs identified in the literature: improved competitive advantage, improved public relations and improved operations. Each construct was measured by items identified in Corbett (2006). The details (including the results of internal consistency of measures using Cronbach's α coefficients) are available in Appendix 1.

4. RESULTS

4.1 Cluster analysis

Following the advice of (Hair et al. 1998), we have conducted the cluster analysis in 2 stages. In the first step, we have used a hierarchical agglomerative technique (Ward's method). The aim was to determine the number of clusters and to identify outliers. There was no single cluster present; hence we assumed that there are no outliers. The agglomeration schedule also revealed the largest step change whilst moving from five to four clusters. Therefore, we have opted for four cluster solution as the most appropriate. A four cluster solution seems appropriate for other reasons as well. Miller and Roth (1994) argue that the number of clusters should be limited between $n/30$ to $n/60$ (where n is the sample size; in our case 213) and that managerial interpretability should be considered. Therefore, we have also considered models between 4 and 7 clusters and

looked at the changes in R square and managerial interpretability based on ANOVA and Scheffe. However, especially from managerial interpretability criteria, a 4 cluster solution provided the best results. The results for the four cluster solution are available in Table 3.

We have named the resulting clusters “Proactive Organisations”, “Quality Focused Organisations”, “Opportunity Taking Organisations” and “Coerced Organisations”. Following Miller and Roth (1994) the interpretations of clusters are predicated upon whether there is a significant difference on the cluster means at the 0.05 level or less and based on relative ranking of the motivations within any given cluster.

Cluster 1: Proactive Organisations (POs)

Proactive Organisations (POs) operate in the networks where ISO 9000 certification matters. Their continuous success depends on ISO 9000 and at the same time, their customers force them to seek certification. Yet unlike Coerced Organisations, POs do not take this coercion as a burden. Instead, they make the most of ISO 9000 certification and embed ISO 9000 proactively in their strategies to address cost reductions, corporate image and use ISO 9000 to gain marketing advantage.

Cluster 2: Quality Focused Organisations (QFOs)

Quality Focused Organisations distinguish themselves from the other clusters by their exclusive focus on quality improvement. They do not need ISO 9000 to succeed, their competitors are not certified and they do not experience any pressure from their customers to seek certification. They purely focus on quality improvements. However, their benefits from ISO 9000 certification are only minor, as we demonstrate later in the paper.

Cluster 3: Opportunity Taking Organisations (OTOs)

Opportunity Taking Organisations (OTOs) are not really coerced into seeking ISO 9000 certification either. Yet there is clearly an opportunity for them to do so and they grasp it. They adopt ISO 9000 to improve their image and relations with authorities and communities. They also use ISO to improve their operations. Consequently, they enjoy the best results as far as the benefits from the certification go, especially in terms of improved external relations and operational improvements.

Cluster 4: Coerced Organisations (COs)

This group of firms is not particularly interested in ISO 9000. Yet their customers pressure them to do so and their success somehow depends on ISO 9000. Consequently, their motivation is to gain marketing advantage, other areas seems of little importance to them. They are able to enjoy only minor benefits from the certification, though.

Table 3 Motivations for Certification by Group*

	ISO 9000 Clusters				F = value (p=probability)
	Proactive Organisations n=46	Quality Focused Organisations n=59	Opportunity Taking Organisations n=50	Coerced Organisations n=58	
	Cluster 1	Cluster 2	Cluster 3	Cluster 4	
<i>ISO and continuing success</i>					
Cluster mean	4.13 (2,4)	2.49 (1,3,4)	3.64 (2)	3.40 (1,2)	30.71
SD	0.78	0.86	0.99	0.98	p<0.001
Rank	2	4	6	4	
<i>Cost Reductions</i>					
Cluster mean	3.98 (2,3,4)	2.21 (1,3)	2.77 (1,2,4)	1.91 (1,3)	40.36
SD	0.83	1.14	1.17	0.17	p<0.001
Rank	5	7	9	9	
<i>Quality Improvement</i>					
Cluster mean	4.59 (2,4)	4.08 (1,3)	4.70 (2,4)	3.81 (1,3)	15.18
SD	1.26	0.54	0.92	0.51	p<0.001
Rank	1	1	1	2	
<i>Marketing Advantage</i>					
Cluster mean	4.04 (2)	2.41 (1,3,4)	3.58 (2)	3.93 (1,3)	25.96
SD	0.94	1.15	1.34	0.93	p<0.001
Rank	4	6	7	1	
<i>Customer Pressure</i>					
Cluster mean	3.91 (2,3)	1.86 (1,3,4)	2.98 (1,2,4)	3.64 (2,3)	40.05
SD	0.97	0.97	1.27	1.03	p<0.001
Rank	6	8	8	3	
<i>Major Competitors Certified</i>					
Cluster mean	3.22 (2,3,4)	1.34 (1,3,4)	2.22 (1,2)	2.57 (1,2)	33.74
SD	1.20	0.58	0.93	1.14	p<0.001
Rank	8	11	11	6	
<i>Benefits Experienced by Others</i>					
Cluster mean	2.80 (2,4)	1.66 (1,3)	2.70 (2,4)	1.78 (1,3)	21.52
SD	0.84	0.92	1.09	0.86	p<0.001
Rank	10	10	10	10	
<i>Avoid Potential Export Barrier</i>					
Cluster mean	1.75	1.27 (3)	1.88 (2)	1.47	4.57
SD	1.06	1.08	0.64	1.18	p=0.004
Rank	12	12	12	12	
<i>Capturing Workers' Knowledge</i>					
Cluster mean	3.51 (2,4)	2.49 (1,3)	3.76 (2,4)	1.93 (1,3)	34.44
SD	0.99	1.21	1.14	0.90	p<0.001
Rank	7	5	5	8	
<i>Relations with Authorities</i>					
Cluster mean	3.04 (3,4)	2.66 (3)	4.16 (1,2,4)	2.29 (1,3)	24.33
SD	1.26	1.35	0.79	1.24	p<0.001
Rank	9	3	3	7	
<i>Relations with Communities</i>					
Cluster mean	2.57 (2,3,4)	1.85 (1,3)	3.80 (1,2,4)	1.53 (1,3)	56.28
SD	1.13	1.03	1.03	0.71	p<0.001
Rank	11	9	4	11	
<i>Corporate Image</i>					
Cluster mean	4.04 (2,4)	2.85 (1,3,4)	4.51 (2,4)	3.38 (1,2,3)	31.66
SD	0.79	1.14	0.62	1.07	p<0.001
Rank	3	2	2	5	

* Represents the average degree of importance attached to each motivation by cluster. Motivation is measured on 5 point scale (Scale 1-5; 1=not important at all, 5=extremely important)

** The rank of importance of this motivation within the group

Number in parentheses indicate the group numbers from which the group was significantly different at the p<0.05 level according to the Scheffe pairwise comparison procedure. F statistics and associated p-values are derived from one-way ANOVAs.

4.2. Validation of clusters

Canonical discriminant analysis is used as a means of distinguishing among a group of samples from potentially different populations. The goal is to identify the axis of greatest discrimination between groups identified a priori and test whether the means of those groups are significantly different. We have adopted multiple group discriminant analysis with 4-1=3 canonical variates and 12 motivations comprising the predictor set in SPSS. As a result, we have obtained relationship between 12 taxons and cluster membership, shown in Table 4.

Table 4 Results of Canonical Discriminant Analysis

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation R _c	Significance
1	2.00	49.65	49.65	0.82	p<0.0001
2	1.57	38.90	88.55	0.78	p<0.0001
3	0.46	11.45	100.00	0.56	p<0.0001

	Canonical Loadings		
	Function 1	Function 2	Function 3
relations with communities	0.63*	-0.21	0.27
capturing workers' knowledge	0.50*	-0.06	-0.19
corporate image	0.45*	0.11	0.31
benefits experienced by other companies	0.40*	0.11	-0.08
relations with authorities	0.35*	-0.16	0.20
quality improvement	0.33*	-0.06	-0.11
avoid potential export barrier	0.14*	0.09	0.07
customer pressure	0.21	0.57*	0.25
major competitors certified	0.22	0.55*	0.01
marketing advantage	0.17	0.43*	0.29
ISO and cont success	0.33	0.37*	0.09
cost reductions	0.40	0.22	-0.64*

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions, Variables ordered by absolute size of correlation within function.

* Largest absolute correlation between each variable and any discriminant function

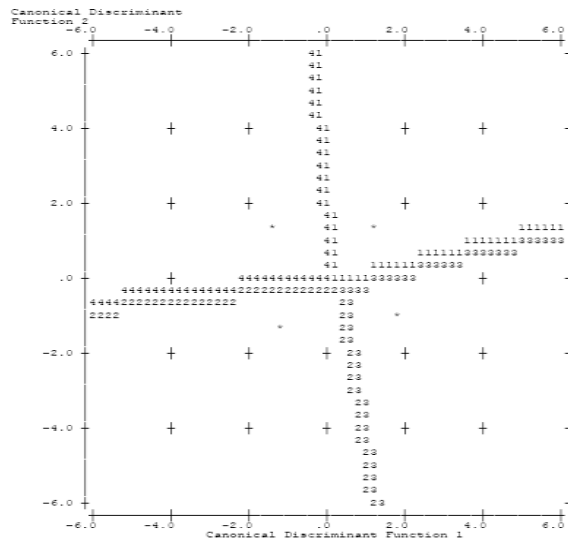
The results are helpful in labelling the underlying dimensions in motivations for ISO 9000 certification. Following Miller and Roth (1994), we consider canonical loadings above 0.40. Using this approach, we label canonical function 1 as “strategic focus”. This label depicts well the underlying nature of such diverse activities as using ISO certification to manage larger stakeholder base, internal and external learning (i.e. knowledge management versus learning from other companies that found ISO 9000 beneficial) and improving corporate image. Similar dimension can be traced in, for instance, the work of Yeung et al (2003). They label high maturity quality systems as strategic management systems. Another possible label could be “integration”. But integration also means merging operations with strategy so that we opted for the former label.

We interpret canonical function 2 as “coercive pressure”. This dimension is dominated by customer pressure that forces (and motivates) organisations to get certified. Similarly, the fact that other competitors are certified, forces organisations to seek ISO 9000 certification. Figure 1 describes the position of our 4 clusters on a territorial map derived from the canonical coefficients. It clearly shows that Coerced Organisations (COs) and Proactive Organisations (POs) find themselves under a considerable pressure to get certified. However, POs demonstrate a clear strategic focus and get the most out of the certification. COs just get certified as they have to. Similarly,

the territorial map shows that Proactive Organisations (POs) as well as Opportunity Taking Organisations (OTOs) focus at getting the most out of ISO 9000 certification. The difference is, though, that OTOs are not coerced to do so yet they see an opportunity to exploit ISO 9000 for their benefit.

Figure 1 Territorial Map indicating group centroids and canonical functions

(Note: 1=Proactive Organisations; 2=Quality Focused Organisations; 3=Opportunity Taking Organisations; 4=Coerced Organisations; * indicates a group centroid)



We have also evaluated the probability of misclassification. Classification results are provided in Table 5 and suggest that overall discrimination power of the taxons is very good. Our results compare favourable with similar research. For instance, Miller and Roth's (1994) 3 cluster solution showed 72 percent, 99 percent and 83 percent correctly classified case.

Table 5 Classification Results^a

	Predicted Group Membership				Total
	Proactive Organisations	Quality Focused Organisations	Opportunity Taking Organisations	Coerced Organisations	
Proactive Organisations	42 (100%)	0	0	0	42 (100%)
Quality Focused Organisations	0	53 (91%)	2 (3%)	3 (6%)	58 (100%)
Opportunity Taking Organisations	3 (7%)	2 (4%)	40 (89%)	0	45 (100%)
Coerced Organisations	0	3 (6%)	0	48 (94%)	51 (100%)

^a93.4% of original grouped cases correctly classified.

4.3. Industrial mix

Table 6 contains the data about the stratification of different industries in 4 clusters. Industry classification follows New Zealand Division and Industry Code Classification. The results show some interesting differences. For instance, it is apparent the coercive pressure is notable within Construction industry. This is hardly surprising given the preference that is given to construction firms in tenders. Similarly, Property and Business Services show a high level of coercive pressure yet this is somehow modified by almost equal number of organisations that do not perceive any coercive pressure. Here, more in-depth research would be necessary to distinguish between these organisations. By the same token, there appear to be industries, where the coercive pressure almost does not exist. For instance, Retail Trade, Transport and Storage or Health and Community services show zero or low number of organisations under pressure to get certified. One explanation here is that there are other certifications in the industry that are more important than ISO 9000. ISO 9000 is simply for organisations that want to achieve more (recall canonical function 1 – Strategic Focus). For instance Health Sector has to comply with various governmentally imposed certification schemes or Education Sector with globally recognised certifications such as AACSB or EQUIS. However, the results for these sectors must be taken with caution due to a small sample size in these sectors.

Table 6 Industry Representation in Clusters (Number of Respondents)

Division (Industry Codes)		Cluster Number of Case				Total
		Proactive Organisations	Quality Focused Organisations	Opportunity Taking Organisations	Coerced Organisations	
D (36-37)	Electricity, Gas and Water Supply	3	2	4	2	11
E (41-42)	Construction	14	7	7	16	44
F (45-47)	Wholesale Trade	5	5	4	8	22
G (51-53)	Retail Trade	0	3	1	0	4
I (61-67)	Transport and Storage	3	11	5	4	23
J (71)	Communication Services	3	0	0	2	5
J (73-75)	Finance and Insurance	0	1	1	0	2
L (77-78)	Property and Business Services Government Administration and	17	21	13	26	77
M (81-82)	Defence	0	3	4	0	7
N (84)	Education	0	3	0	0	3
O (86-87)	Health and Community services	1	2	7	0	10
P (95-97)	Personal and Other Services	0	1	4	0	5
Total		46	59	50	58	213

4.4. Benefits from ISO 9000 certification

Table 7 outlines the benefits that different clusters enjoy from ISO 9000 certification. The most notable result is that canonical function 1 (Strategic Focus) distinguishes organisations that do enjoy the benefits from organisations that achieve very little. Canonical function 2 (coercive pressure) does not seem to explain the difference in terms of the benefits from certification. As result, strategically focus organisations (Cluster 1 and 3) outperform other clusters and gain better results in terms of competitive advantage and improved operations (both result are statistically significant). Cluster 1 get slightly lower performance in external relations dimensions yet still scores better than Clusters 2 and 4. Winner, in terms of overall benefits from ISO 9000 certification, is Cluster 3. Cluster 2 and 4, on the other hand, clearly show that ISO 9000 delivers only minor benefits. The results also show that ISO 9000 delivers mainly in terms of improved operations. All clusters rank operations improvement as first in terms of the

benefits. Most of the clusters also rank Improved Competitive Advantage as second and Improved External Relations as the least important element. The only exemption is Cluster 3. These organisations use ISO 9000 for their external relations and seem to enjoy moderate/substantial benefits in doing so. This result, and in fact other results in this cluster, strengthens the premise that Opportunity Taking Organisations are the best in terms of ISO 9000 integration to their daily routines and strategic decision making.

Table 7 Benefits from ISO 9000 certification

	ISO 9000 Clusters				F = value (p=probability)
	Proactive Organisations n=46 Cluster 1	Quality Focused Organisations n=59 Cluster 2	Opportunity Taking Organisations n=50 Cluster 3	Coerced Organisations n=58 Cluster 4	
Improved Competitive Advantage					
Cluster mean	3.04 (2,4)	2.13 (1,3)	3.04 (2,4)	2.34 (1,3)	F=25.22
SD	0.64	0.67	0.65	0.73	p<0.001
Rank	2	2	3	2	
Improved External Relations					
Cluster mean	2.59 (3,4)	2.07 (3)	3.40 (1,2,4)	1.86 (1,3)	F=28.11
SD	1.01	0.88	1.04	0.82	p<0.001
Rank	3	3	2	3	
Improved Operations					
Cluster mean	3.27 (2,4)	2.66 (1,3)	3.47 (2,4)	2.49 (1,3)	F=24.82
SD	0.71	0.72	0.56	0.70	p<0.001
Rank	1	1	1	1	

DISCUSSION

In this study, we have developed an empirical taxonomy based on the relative importance attached to 12 motivations to seek ISO 9000 certification. He hypothesised that ISO 9000 organisations can be classified based on their motivations (H1). We found evidence to support this hypothesis. The results also suggest that different motivations yield different benefits from the certification, providing support for H2. The resulting groups were labelled as Proactive Organisations, Quality Focused Organisations, Opportunity Taking Organisations and Coerced Organisations. Furthermore, we have identified two underlying characteristics: strategic focus and coercive pressure. The results are graphically depicted in Figure 2.

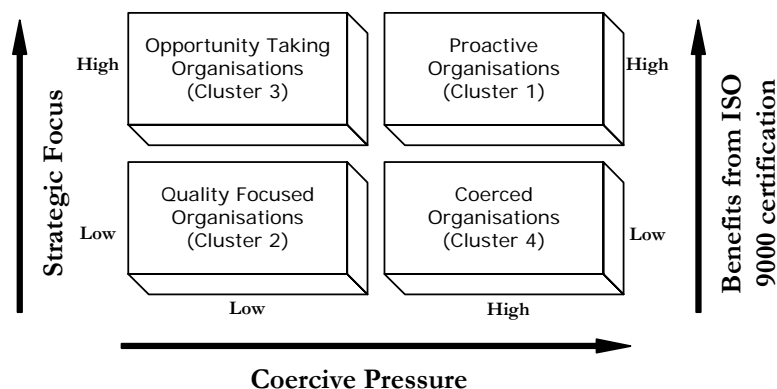


Figure 2 An Empirical Taxonomy of ISO 9000 certified organisations

The results suggest that organisational ability to integrate ISO 9000 in the daily routine as well as organisational strategy distinguishes organisations that can benefit from ISO

certification from organisations enjoying only minor benefits. This strategic element has been identified previously in many studies in the quality management field as well as in other disciplines. For instance, a taxonomy developed by Terziovski and Power (2007) identifies a group of high performers (Integrated Quality Group) with similar characteristics to our Proactive Organisations group. Other taxonomies also emphasise the importance of strategic dimension. For instance, Yeung et al's (2003) strategic management system or strategic purchasing configuration by (Cousins et al. 2006). In this respect our study confirms the role of strategic focus and integration in explaining organisational behaviour.

Our results also show that coercive pressure does not distinguish organisational benefits from ISO certification. This finding is less evidenced in the literature despite the fact that coercive pressure is an important force in ISO certification (Corbett 2006; Guler et al. 2002). Much debate recently has been focused on whether certification is the right mechanism to install certain organisational practices and in fact achieve superior performance (Terlaak 2007; Toffel 2006). Certification has also received much criticism from practitioners (Lal 2004; Zuckerman 1996) as well as standards developers (Castka and Balzarova 2007) – both groups questioning the efficiency of this process as well as the negative role of coercive pressure on ISO 9000 installation. Indeed, our findings demonstrate organisations can enjoy the benefits of ISO 9000 if under pressure from their customer (or stakeholders in general) or also if they choose to exploit the certification without any pressure from their stakeholder base. In fact, this last group of organisations (Opportunity Taking Organisations) finds ISO 9000 certification the most beneficial from all groups identified in this research. However, their results are very similar to Proactive Organisations, who in fact are under significant coercive pressure to seek the certification. This result leads us to conclusion that coercive pressure should not be used as the definite argument to criticize certification.

Prior to this research, we have found only anecdotal evidence that would suggest a similar role of coercive pressure and its influence on organisational benefits from certification. As far as we know, this is the first empirical study that confirms this empirically. Previous studies confirmed the important need to embed ISO management systems in daily routine and organisational culture (Balzarova et al. 2006; Naveh and Marcus 2005; Terziovski and Power 2007) or assumed that high performers either have a strong benefit from ISO with strong quality culture or strong benefits from ISO with low quality culture (Terziovski and Power 2007). Our taxonomy demonstrates that the critical role of strategic focus and integration yet also that coercion is less important.

This study used a sample of service and construction organisations. The results suggest though that there is not much difference between these sectors and manufacturing sector. (Castka and Balzarova 2006) compared motivations of service and manufacturing sectors. In fact, the only significant difference was in terms of avoiding export barriers (service sector being under less pressure here) and relations with authorities (service sector more motivating here than their manufacturing counterparts). We would envisage that a similar taxonomy would be identified with a manufacturing sample as well.

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Appendix 1

Measures of Benefits achieved from ISO 9000 certification

Improved Competitive Edge ($\alpha=0.84$)

Cost reductions

Increased productivity

Increased customer satisfaction

Increased market share

Maintained increased profit margin

Improved corporate image

Improved Public Relations ($\alpha=0.78$)

Improved relations with authorities

Improved relations with communities

Improved Operations ($\alpha=0.81$)

Quality improvements

Environmental improvements

Increased on-time delivery to customers

Improved internal procedures

Improved employee morale