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ISO9001 Certification in UK Organisations

A comparative study of motivations and impacts.

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Abstract*—Since its introduction in 1987 the ISO 9000 series of standards has become a worldwide success, with it now considered as the minimum standard for a quality management system. The number of ISO 9001 certified companies is increasingly annually. This paper presents the results of research aimed at assessing if the motives for obtaining ISO 9001 certification, and the perceived impacts to be derived from ISO 9001 certification, are seen to vary across different industrial sectors. The study uses a two-phase sequential explanatory mixed methods design, with quantitative data collected from 111 organisations and qualitative data collected from four organisations in the first and second phases respectively. Results show that there are significant statistical differences in the motives for obtaining ISO 9001 certification and also show statistically significant differences in the impacts of ISO 9001 certification based on industrial sector. These results provide a useful addition to the present knowledge in the study of ISO 9001 certification in terms of impact.

***Index Terms*—ISO9001 certification, impacts, motivation.**

I. Introduction

All ISO 9001 is the most widely known international standard for quality management [1] [2]. It outlines the requirements an organisation must meet to show its competence in designing, producing and delivering products and/or services of a consistent quality [3].

Since its introduction in 1987, the ISO 9001 has grown to be a worldwide phenomenon [4]. The 2010 ISO Survey shows that there were 1,109,905 ISO 9001 certificates issued to organisations in 178 countries [5]. This figure is expected to continue to grow as many more organisations seek certification.

For the British Standards Institute, the UK's national standards body, there are great and varied benefits of ISO 9001 certification including aspects such as improved business performance, competitive advantage and increased customer satisfaction [6].

However, many studies into the benefits of the standard have brought forth conflicting results. Studies [7], [8] and [9] concluded that the ISO 9001 certification did result in organisational benefits. However these results contradicted the findings of studies [10] and [11] which concluded ISO 9001 did not result in organisational benefits.

These conflicting results led to researchers assessing other variables which could explain these conflicting conclusions. One key variable identified was the motives that drove organisations to obtain certification.

Further studies [12], [13], [14] and [15] reported a link between the motives for obtaining ISO 9001 certification, with internal motives seen to lead to operational benefits such as an increase in productivity.

Most research on ISO 9001 can be seen to centre on the motives for obtaining, and the impacts derived from, ISO 9001 certification. However, there is a lack of research that assesses whether these motives and impacts are similar for organisations from all sectors.

A limited number of studies, [16] and [17], have been undertaken to assess this issue, by assessing if the motives for obtaining ISO 9001 certification and the impacts of ISO 9001 certification are seen to vary, or not, based on industrial sectors. These studies returned conflicting results with [16] concluding that there were variances whereas [17] concluded that there were not.

Conflicting results from previous studies into the impacts of ISO 9001 certification, and the lack of relevant research on the ISO 9001 from a UK organisational perspective, shows that further empirical research is required.

To address the limitations of previous studies, the aims of this study were to assess whether the motives for obtaining ISO 9001 certification and the perceived benefits derived from ISO 9001 certification vary due to industrial sector for UK organisations.

II. Literature review

A. Impacts of ISO9001 Certification

Benefits of ISO 9001 certification reported in the literature can be classified as one of two categories: 'operational' benefits or 'business' benefits. Operational benefits relate to organisations' internal operations, such as productivity and quality, whereas business benefits relate to finance and marketing [9].

A number of studies have been undertaken to investigate the perceived benefits of ISO 9001 certification. Marin & Ruiz-Olalla [7] examined the impact of ISO 9001:2000 certification on business performance by comparing certified and non-certified companies and concluded that ISO 9001 certified organisations achieved greater results than non-certified organisations. Certified organisations were also seen to achieve greater operational results than non-certified organisations. However, this study only samples one specific industry sector; the furniture industry. Also, the study only

included organisations with 45 or more employees. This excludes small and micro furniture organisations and raises questions whether similar findings would be seen in other sectors, or within smaller organisations.

Zaramdini [8] investigated the benefits of certification by studying certified organisations in the United Arab Emirates (UAE). He concluded that organisations perceived that ISO 9001 certification had generated more operational benefits than business benefits including: improved process and procedures, more quality aware employees, improved product and/or service quality and better customer service.

These positive impacts support the findings of Feng et al [9] who found that there was indeed a relationship with larger (100+ employees) and medium (20-99 employees) firms experiencing greater operational benefits from ISO 9001 certification than small organisations (1-19 employees). However, these results contradict the findings of Gotzamani & Tsiotras [18] who did not find any relationship between organisational size and operational benefits derived from ISO 9001 certification in their empirical research of Greek organisations. Unlike Marin and Olalla [7], Feng et al [9] did not focus on one specific industry. Their sample was a cross sectional 'snapshot' and included organisations from various industries, however, they did not investigate if there were differences in the benefits between industrial sectors.

Quazi et al [10] studied both certified and non-certified organisations in Singapore finding that there was no statistical difference in the operational performance between certified and non-certified organisations. These results contradict the later study of Marin & Ruiz-Olalla [7] as discussed previously, and support the findings of Singels et al [11] who found no difference in the operational performance in certified and non-certified organisations.

The various studies measure the benefits of ISO 9001 certification on different dimensions of performance. These studies were also undertaken in many countries which may affect the findings.

Another factor that differentiates studies [10] and [11] from study [7], which sampled companies certified to ISO 9001:2000, is that companies examined in studies [10] and [11] were certified to the earlier ISO 9001:1994 revision.

B. Motives for Obtaining ISO9001 certification

As can be seen from the literature, reviewed above, research findings on ISO 9001 certification benefits have been mixed and conflicting. An aspect that has been investigated to try and explain these differences is the motivations that drive an organisation to go through the ISO 9001 certification process.

Sampaio et al [4] write that ISO 9001 motivations can be classified as either internal motives or external motives. Internal motivations are related to organisational improvements such as improved product/service quality and a decrease in non-conformities. External motives are related to market performance improvements and customer demands [4].

Zaramdini [8] also investigated the motives that drove organisations to gain ISO 9001 certification. He established that the main motives for UAE organisations to gain certification were internal, including improvements in: processes and procedures, quality awareness, product/service quality, customer service and satisfaction. The one external motive in the top six was 'improving the organisation's image'.

Whereas Zaramdini [8] was concerned with the motives behind certification, other studies [12], [13], [14], [15] have investigated the relationship between these motives and the perceived benefits of ISO 9001 certification.

Projogo [12] concluded that there was a positive relationship between internal motives and operational performance, whereas there was no statistically significant relationship between external motives and operational benefits.

An earlier study by Terziovski & Power [13] investigated the link between motives and business performance in Australian organisations. Their results show that the motives behind going for ISO 9001 certification impact significantly on the benefits derived from certification. The strongest relationship was between a continuous improvement strategy (internal motives) and business performance. External motives had a positive yet weak relationship with business performance. These results are supported by other studies [12], [14], and [15], in that organisations obtaining ISO 9001 certification for internal reasons see greater benefits. Jang & Lin [15] argue that external motives can also lead to benefits, but only if these external motives are transformed into an 'internal' desire for quality.

It can be surmised that when organisations are internally motivated to gain ISO 9001 certification then they are showing the intention to build a quality system that will enhance their operational performance and thus lead to increased benefits. When external motives are the main motives the organisation apparently does not obtain the full potential benefits of the standard as they do not build their quality systems, they are in effect gaining certification for the 'badge'.revision.

C. Cross Industry Application

In sub-sections 2.1 and 2.2, studies have been discussed that have investigated the motives that drive organisations to obtain ISO 9001 certification and the perceived benefits derived from certification. Some studies, [7] and [14], sampled organisations from specific industries, Other studies [12], [8], [9] utilised cross-industry sampling. However, there are few studies that assess if motives to gain ISO 9001 certification and the perceived benefits from certification are the same for organisations from different industries. Two studies that do investigate this issue are [16] and [17].

Al-Rawahi & Bashir ([16] sought to investigate if the motives behind ISO 9001 certification and the benefits experienced differed based on the industry of the certified organisation and conclude that motives for obtaining ISO 9001 certification do not differ based on industry sector. Furthermore, industrial sector was also found not to be a factor in terms of benefits experienced from certification. This is in contradiction to an earlier study [17] which

concluded that there were differences in the motives for obtaining ISO 9001 certification and the perceived benefits based on industrial sector.

Both studies found that the motives to obtain ISO 9001 certification are mostly similar for organisations regardless of the industry. Nevertheless, there are inconclusive results as to whether the benefits experienced from certification are the same no matter the industry. Similarly to previous sections these differences may be due to studies being in different countries with different economies, and related aspects. Differences could also be partly explained with the variation in surveys samples analysed.

III. Methodology

In response to identified gaps in previous studies on the motives for obtaining and the impacts reported of ISO 9001 certification, the aims of this two-phase sequential explanatory mixed methods study were to assess whether the motives for obtaining ISO 9001 certification and the perceived benefits derived from ISO 9001 certification vary due to industrial sector for UK organisations.

The study was implemented in two phases, with greater weight placed on phase I, the quantitative phase. A sample of 500 ISO 9001:2008 certified organisations were selected from the United Kingdom Register of Quality Assessed Companies. An internet based survey instrument was designed to obtain data on the motives behind obtaining ISO 9001 certification and the perceived benefits of certification and sent to the 500 organisations with 111 valid responses. From the survey responses four industrial categories emerged; manufacturing, services, engineering and constructions. Phase II saw qualitative data collected through semi-structured interviews with a small sample of four survey respondents. Phase II was used to elaborate and expand on the findings of phase I. Both phases are then 'mixed' in the discussions following sections.

IV. Results

The greatest number of responses came from the service sector (38.7%), followed by manufacturing (32.4%), engineering (21.6%) and construction (7.2%).

Manufacturing organisations were certified to ISO 9001 for a greater length of time than the other sectors, with a median value of 20 years, with many organisations certified to BS 5750 prior to the establishing of the ISO 9000 series.

A. Motives for Obtaining ISO9001 Certification

This section presents the descriptive and inferential statistics for the motives for obtaining ISO 9001 certification for the four industrial sectors. As the data is ordinal, non-parametric descriptive statistics are used, with these being the median and the mode. The Kruskal-Wallis test is used to assess if there are statistically significant differences in the motives between the four industrial sectors.

In the survey, respondents were asked to record how important statements representing motives for obtaining ISO 9001 were for their organisation. Answers were given on five-point Likert items, which were coded as the following: 1 = not important, 2 = not very important 3 = not sure, 4 = important and 5 = very important.

Based on the Likert item scaling, a sector is considered to have identified a motive statement as important if the median score for that item is above the central value of three.

The medians and modes of the 'motive' items for each industrial sector are shown in Table I.

The results for service organisations show that only three of the nine motives were deemed important: 'to improve processes', because 'competitors were certified' and 'to gain a competitive advantage'. For manufacturing organisations, the motives considered important were: 'to improve processes', 'due to customer demand', 'to gain competitive advantage' and 'to gain entry into new markets'.

The engineering sector respondents considered all five external motives as important, with one internal motive, 'to improve processes', also important. Similarly to the engineering organisations, construction organisation respondents considered all five external motive items to be important. From the internal motives, only 'to improve processes' was thought of a being important, with the remaining items returning median values of 1, showing that these are not considered important motives at all by the construction respondents.

When the Table I results are cross-analysed, it can be seen that there are both similarities and differences in the motives for obtaining ISO 9001 certification across the four industrial sectors.

For all four industry respondents, external motives are the main drivers for obtaining certification.

From the four internal motive items, only 'improve processes' was considered to be an important motive for obtaining certification, with all median and mode values above 3.

The remaining internal motives were not considered to be important by any of the industrial sectors, with the construction respondents considering them least important with median and mode values of 1.

It is apparent that organisations, across all sectors, are driven to obtain ISO 9001 certification by external motives, although, the results in Table I show that the median values for the specific external motives vary based on industrial sector.

From the five external motive items only one item, to 'gain a competitive advantage' was seen as an important motive across all industrial sectors, the remaining items returned contrasting results based on industrial sector.

Customer demand was considered an important motive for the manufacturing, engineering and construction organisations, however, with a median value of 3 inconclusive results were seen for the service organisations.

TABLE I. MOTIVES FOR OBTAINING ISO9001 CERTIFICATION: DESCRIPTIVE STATISTICS

Item	Services		Manufacturing		Engineering		Construction	
	Median	***Mode***	***Median***	***Mode***	***Median***	***Mode***	***Median***	***Mode***
Internal Motives								
Reduce costs	2	1	2	1	2	1	1	1
Reduce complaints	2	2	2	1	3	1	1	1
Increase productivity	2	4	2	1	3	1	1	1
Improve processes	4	4	4	4	4	4	3.5	5
External Motives								
Customer demand	3	5	5	5	5	5	5	5
Increase market share	2	1	2	2	4	5	3.5	5
Competitors were certified	4	4	3	4	4	4	4.5	5
Gain competitive advantage	4	5	4	4	4	4	4.5	5
Gain entry to new markets	1	1	4	4	4	5	4	5

Whereas engineering and construction respondents view gaining market share as an important motive for obtaining certification, manufacturing and construction industries did not share this view.

For the construction industry the most important motive was ‘competitors were certified’, with a median value of 4.5. This was also considered an important motive by the service and engineering organisations too. However, with a median of 3 the results for manufacturing were inconclusive, although, the mode for the item was 4.

Service organisations recorded that ‘gaining entry to new markets’ was not an important motive for obtaining certification, with median and mode values of 1 seen. This contrasts with the results of the remaining sectors which, with medians of 4, considered this to be an important motive.

From the median values presented it can be seen that there are variances on the motive items based on industrial sector, however, are these differences statistically significant? To assess this, the Kruskal-Wallis test was used, with the test applied to each individual motive item. The null hypothesis was:

HI = The motives for obtaining ISO 9001 certification do not vary due to industrial sector.

TABLE II. KRUSKAL-WALLIS TEST ‘MOTIVES’

	Service	Manufacturing	Engineering	Construction	*P*	Hypothesis
Item	***z value***	***z value***	***z value***	***z value***	***Value***	***(α= 0.05)***
Internal Motives						
Reduce costs	-0.48	0.55	1.06	-1.79	0.241	*Accept*
Reduce complaints	-1.18	0.55	1.35	-0.92	0.352	*Accept*
Increase productivity	1.7	-1.35	0.93	-2.26	0.038	*Reject*
Improve processes	-1.16	-0.07	1.41	0.07	0.494	*Accept*
External Motives						
Customer Demand	-2.8	2.08	0.93	0.03	0.039	*Reject*
Increase Market Share	-2.8	-0.16	2.49	1.6	0.008	*Reject*
Competitors Were Certified	-0.51	-2.24	1.57	2.51	0.010	*Reject*
Gain Competitive Advantage	-0.03	-0.18	-0.35	0.92	0.824	*Accept*
Gain Entry to New Markets	-2.98	0.26	2.46	1.24	0.009	*Reject*

Table II presents the z value for each industrial sector for each motive item; the z value indicates how the mean rank of an industrial sector differs from the mean rank of all responses for the item. A negative z value indicates the mean rank is less than the mean rank for all observations, whilst a positive z

value indicates the mean rank is greater than the mean rank of all observations.

From Table II, it can be seen that the null hypothesis was rejected for five of the items, one internal motive 'increase productivity' and four external motives.

When looking at the z values, the largest difference is between the service and construction organisations. By looking again at the results in Table 1, it can be seen that for services - although the median was 2 - the mode was 4, a higher mode than any sector. The median and mode values for construction were 1. These values can explain the difference in z values.

The null hypothesis was rejected for four of the five external motive items, with the hypothesis only accepted for the 'to gain competitive advantage' item.

The null hypothesis was rejected for the 'customer demand' item with p =0.039. By analysing the z values the manufacturing, engineering and construction sectors all had positive z values, with services having a z value of -2.8.

Similar results were found for the 'to gain entry to new markets' item, with manufacturing, engineering and construction organisations seeing positive z values with service organisations, again, seeing a negative value with a z value of -2.98. This result shows that the variance seen with the median results of this item were significantly significant.

Finally, the remaining external motive to see the null hypothesis rejected was the 'competitors were certified' item. The median results previously presented showed that services, engineering and construction respondents deemed this an important motive, whereas manufacturing organisations were unsure. With p = 0.01, the differences are statistically significant. Construction organisations considered this the most important motive of all, and saw a z value of 2.51, with manufacturing seeing the lowest z value of -2.24.

When the z values are cross-analysed it can be seen that service organisations saw the lowest z value for five items, with engineering organisations having the highest z values for five items.

From the results on the Kruskal-Wallis test it can be surmised that the motives to obtain ISO 9001 certification do vary due to industrial sector.

B. Impacts of ISO9001 Certification

Respondents to the survey were also asked to record how strongly they agreed with ten impacts of ISO 9001 certification; with five items being operational benefits and five items being business benefits. Answers were given on five-point Likert items, which were then coded as the following: 1 = strongly disagree, 2 = disagree 3 = not sure, 4 = agree and 5 = strongly agree.

Similarly to the previous section, the descriptive statistics are presented first, followed by the results of the Kruskal-Wallis test to assess if the impacts of ISO 9001 certification vary due to industrial sector.

Based on the Likert item scaling an industrial sector is considered to have had an impact if the median score for that item is above the central 'not sure' value of three.

TABLE III. IMPACTS OF ISO9001: DESCRIPTIVE STATISTICS

Item	**Services**		**Manufacturing**		**Engineering**		**Construction**	
	Median	***Mode***	***Median***	***Mode***	***Median***	***Mode***	***Median***	***Mode***
Operational Impacts								
Reduce Internal Quality costs	3	4	4	4	3.5	4	3	3
Increased Productivity	4	4	3	3	3	3	2	2
Greater Product/Service Quality	4	4	4	4	4	4	3	4
Fewer Customer Complaints	3	4	4	4	4	4	3.5	4
Reduced Inspection Costs	3	3	3	3	3	3	3	3
Business Impacts								
Increased Competitiveness	3	4	4	4	3	3	3.5	4
Increased market share	3	3	3	3	4	4	3	3
Increase in Exports	3	3	3	3	3	3	2	2
Increased Revenue	3	3	3.5	4	4	4	3.5	4
Increased Profits	3	4	3.5	4	3	3	2.5	2

From the results shown in Table III, it can be seen that for service organisations the operational impacts of certification are 'increased productivity' and 'greater product/service quality'. For business results median values of 3 were returned for the five items, resulting in the inconclusive results on whether business benefits are to be had or not.

Manufacturing organisations perceived the operational impacts of certification to be reduced internal quality costs, greater product/service quality and fewer customer complaints. The business impacts of certification were perceived to be increased competiveness, increased revenue and increased profits.

The engineering respondents, who completed the survey, perceived the operational impacts of ISO 9001 certification to be reduced internal quality costs, greater product/service quality and fewer customer complaints. Business impacts were perceived to be increased market share and increased revenue.

For construction organisation respondents, only one operational item was considered an impact with this being 'fewer customer complaints'. Two business impacts were perceived to be derived from certification with these being 'increased competitiveness' and 'increased revenue'.

It can also be seen from Table III that median values, and perceived impacts, varied on each impact item bar one. All sectors saw a median value of 3 for whether certification had resulted in reduced inspection costs with all sectors undecided if this was indeed an impact of certification or not.

'Reduced internal quality costs' was perceived as an impact by both the manufacturing and engineering organisations, with service and construction organisations undecided if it was or not.

Only the service sector perceived 'increased productivity' to be an impact of certification, with the construction sector disagreeing that it was an impact and the manufacturing and engineering sectors undecided if it was or not.

'Greater product/service quality' was perceived to be an impact of ISO 9001 certification by all sectors, bar the construction respondents who, with a median value of 3 were undecided, although the mode value returned was 4.

Similarly, 'fewer customer complaints' was considered an impact by all industrial sectors, with the exception of the service industry which was undecided with a median of 3.

All industrial sectors bar the service sector perceived that 'fewer customer complaints' was an impact of certification; the service sector was undecided it was or not with the median being a central value of 3, although the mode was 4.

In cross-analysing the business impact items, variances can be seen cross-sector for all impacts.

Whereas manufacturing and construction organisation perceived 'increased competiveness' as being an impact of certification, this was not the result perceived by service and engineering organisations who were unsure if it was indeed an impact from certification.

When asked if they agreed that ISO 9001 certification resulted in 'increased market share' only engineering firms agreed that it did, with the remaining three sectors returning median values of 3 signalling they were unsure if 'increased market share' was a benefit of certification.

Not one of the industries perceived an 'increase in exports' as being a benefit to be derived from certification, however, only the construction industry believed it was not a benefit, with service, manufacturing and engineering undecided if it was or not.

Respondents from the manufacturing, engineering and construction organisation perceived one business impact of certification to be 'increased revenue', with this especially true for the engineering firms. Service organisations can be seen to be unsure, however, as the median and mode values for the service sector are 3, with this showing that service organisations are unsure if this is an impact.

Engineering and construction respondents may have perceived an increase in revenue from certification, however they did not believe 'increased profits' was a result of obtaining ISO 9001 certification, whereas the manufacturing organisations did. The service sector returned inconclusive results with a median of 3.

It can also be seen that there are variances on the perceived impacts of certification due to industrial sector.

To assess whether there were statistically significant differences in the motives for obtaining ISO 9001 based on industrial sector the Kruskal-Wallis test was used, with the test applied to each individual motive item. The null hypothesis was:

H2: The perceived impacts of ISO 9001 certification do not vary due to industrial sector.

The results are presented in Table IV.

The null hypothesis was rejected for the 'greater product/service' item with $p = 0.001$. The median results for the item showed the medians for services, manufacturing and engineering were equal at 4. However, the z value presents a different result with the z value for services greatly lower than that of both manufacturing and engineering, with services z value being -2.93, compared to 2.11 for manufacturing and 2.36 for engineering. Like the service sector the construction mean average rank was also less than the mean average ranks of all sectors, with this evident with a z value of -2.05.

Statistically significant difference was seen in the Kruskal-Wallis test for the 'fewer customer complaints' item with the null hypothesis rejected with $p = <0.001$. Differences between the sectors on this item were previously evident from the cross-analysis of the median values; however, the extent of the variance is shown in the z values. Both manufacturing and engineering had medians of 4, however, there is a significant difference in the z values with a z value of 1.40 for manufacturing compare to 3.32 for engineering.

Both service and construction sectors returned negative z values with -1.00 for construction, and services -3.60, with the lowest of all and a large variance from the engineering z value.

From the five business impact items the null hypothesis was rejected for two items; 'increased market share' and 'increase in exports'.

The null hypothesis was rejected for the 'increased market share' item with $p = 0.001$. The median results presented earlier had shown that service, manufacturing and engineering respondents were unsure if this was indeed an impact of certification, whereas engineering with a median of 4 considered it to be an impact. In comparing the z values of the sectors a large variance is evident between the services sector with a z value of -3.23, compared to a z value of 3.17 for the engineering sector.

The null hypothesis was also rejected for the 'increase in exports' item, with $p = 0.010$. Construction organisation had the lowest z value at -2.28 compared to manufacturing which had the highest z value at 2.07.

When the z values of the impact items are cross-analysed based on industrial sector, it can be seen that the service industry returned the lowest z values for four of the five operational impacts and for four of the five business impacts. The engineering sector had the highest z values for five items, with manufacturing the highest for three. The construction industry saw negative z values for all items bar one, the 'increase in exports' item.

From the results on the Kruskal-Wallis test it can be surmised that the perceived impacts derived from ISO 9001 certification do vary due to industrial sector.

TABLE IV. KRUSKAL-WALLIS TEST 'IMPACTS'

	Service	**Manufacturing**	**Engineering**	**Construction**	***P***	**Hypothesis**
Item	***z value***	***z value***	***z value***	***z value***	***Value***	***(α= 0.05)***
Operational Impacts						
Reduced Internal Quality Costs	-2.68	3.34	0.16	-1.25	0.004	*Reject*
Increase Productivity	2.52	-1.97	1.00	-2.78	0.002	*Reject*
Greater Product/Service Quality	-2.93	2.11	2.36	-2.05	0.001	*Reject*
Fewer Customer Complaints	-3.60	1.40	3.31	-1.00	<0.001	*Reject*
Reduced Inspection Costs	-1.13	-0.09	1.98	-0.86	0.209	*Accept*
Business Impacts						
Increased Competiveness	-1.12	0.54	0.92	-0.34	0.631	*Accept*
Increased Market Share	-3.23	1.20	3.17	-1.13	0.001	*Reject*
Increase in Exports	-1.89	2.07	1.32	-2.28	0.010	*Reject*
Increased Revenue	-2.52	0.81	1.96	0.16	0.061	*Accept*
Increased Profits	-1.25	2.07	-0.08	-1.25	0.150	*Accept*

C. Phase II

In-depth interviews were carried out with an organisation within each of the sector categories and the main findings are reported below.

Service Quality Organisation

The service organisation selected was an architecture firm with 19 employees and a turnover of £1.7m. The organisation's quality system had been certified to ISO 9001 since 1997 and they had also obtained ISO 14001. The organisation did not have a dedicated quality department, with the system being outsourced to a quality specialist. The interviewee was the Managing Director MD of the company.

For the MD, the motives for certification were a mix of internal and external motives, although he admitted external factors had a greater influence. The company's main client base is public sector. The impact of this in his view was "without certification we would not be considered for work by public sector bodies". Certification enables the organisation to compete, increase its chance of winning contracts and make it a more viable option for public sector bodies. Secondly, he stated that the organisation was also interested in the additional benefits seen from certification with the organisation keen to improve and standardise it documentation systems increasing efficiency.

In terms of benefits, the main benefit of certification was simple "it allowed us to be considered for public sector contracts, which is now the main client base for us". Certification was also considered to have led to increased revenue due to the increase in public sector work. When prompted on the operational benefits of certification, the MD believed the primary operational benefit was that he believed the procedures are more standardised resulting in people working to the same "methods".

Manufacturing Organisation

The manufacturing organisation selected to participate in phase II employed 115 people and had a turnover of £20m. This company had also obtained ISO 14001 and OHSAS 18001 certification, and was working towards obtaining ISO 50001 (having been certified to ISO 9001 since 1994). The interviewee in this company was again, the managing director. Certification was customer driven, "more and more of our customers were including ISO 9001 as a condition of being a supplier". A number of competitors had already gained certification and the organisations did not want to be left behind in the market place. At the time of implementation the organisation had expanded into new markets in Asia and believed that certification would project an image of a "quality focused company", with this enabling the organisation to gain a foothold in these new markets.

The managing director strongly believed that the documentation of procedures in line with ISO 9001 had greatly improved the quality of the product; standard operating procedures ensured a more consistent product with less variation. Implementation of the standard resulted in the organisation "pushing quality onto the employees" with an effort to change how people thought about quality. The aim was to "build quality into every role and every procedure" and

the MD believes that this approach has led to a change in the quality culture and also continuous improvement schemes to be undertaken with little resistance. He also believed in the "power" of the internal audit which he considered an important tool for identifying opportunities to improve.

A key motive in obtaining certification was to enter new markets "the quality badge of the ISO gave potential customers reassurance that we were a quality conscious company and this resulted in gaining entry in the Asian markets". ISO 9001 was considered to have had a positive financial impact coming from the increased quality of the product and the increase of exports.

Engineering Organisation

The engineering organisation selected for phase II employ 2700 people, has a turnover of £110m and have been certified to ISO 9001 for 24 years. The interviewee was the company's Quality Manager.

The main motivation was 'customer demand'. It was considered a must to be certified to be considered as a potential supplier to governmental departments, the main clientele of the organisation.

The Quality Manager believed certification had brought numerous benefits, the main benefit being it allowed them to tender for projects as "without it customers would have questioned our ability to tender". Certification gave the quality system a "foundation" to build from. He stated that the greatest benefits were seen to be increased competiveness and fewer customer complaints. Processes became more efficient due to less mistakes being made as work instructions became standardised resulting in a consistent product.

Construction Organistion

From the eight construction organisations that responded to the survey in phase I, only one was willing to participate in phase II of the study. The participating organisation had 35 direct employees, had a turnover of £4m and obtained ISO 9001 certification in 2005. The organisation does not have a dedicated quality department, with the quality management system managed by the accounts/administration department. The interviewee for this organisation was its Account Controller.

The organisation was highly motivated by external factors whilst making the decision to obtain ISO 9001 certification. Certification became a requirement to be considered for client's tender lists. Not having certification was impacting on the business as they were losing market share to certified competitors who met the tender requirements expected by a growing number of potential clients.

There was a definite improvement reported in the number of customer complaints post-certification. Although she could did give an exact reason for this, the interviewed believed it may be down to the standardisation of work instructions leading to employees working to the same level of standard. Certification also ensured the organisation met customer requirements, with this resulting in more contracts being awarded which in turn increased revenue - "we were able to tender for more contracts due to being certified". When asked about operational benefits she was not as sure: "I don't really know, the procedures are documented which makes things easier but I don't really know what else, apart from less complaints".

D. Cross Case Analysis

The principal motivation for certification was similar across all four organisation with the subtheme of 'customer demand' the prominent motive. Another subtheme of 'internal improvements' was considered to be a secondary motive for the service and construction organisations, with internal improvements not being considered a motive for the manufacturing and engineering organisations.

With regards to the benefits, the prominent subtheme evident across all organisations was 'customer orders', including 'gaining orders' and 'increasing the potential to gain orders'. A second subtheme evident was 'operational improvements', although the factors of 'operational improvements' varied between organisations. The organisations that implemented ISO 9001 with a strong 'internal' focus reported a greater level of operational impacts, with these organisations being the manufacturing and engineering participants.

The benefits of certification first identified after obtaining certification were said to be maintained rather than continuously increasing.

V. Conclusions

The literature review revealed gaps in the current knowledge on the motives for obtaining, and the impacts of, ISO 9001 certification. With these gaps in mind a two-phase sequential explanatory mixed methods study was carried out to assess the motives for obtaining, and the impacts of, ISO 9001 certification for UK organisations.

The results of the quantitative phase show that the motives for obtaining certification did vary by industry sector, and, that UK organisations were highly motivated by external motives.

The qualitative phase results helped explain certain aspects of the quantitative phase results for the motives variables. For sectors which considered meeting customer demands to be the greatest motive, all other reportedly important external motives were found to be linked to the primary motive of meeting the customer demand.

The quantitative results also show that perceived impacts of ISO 9001 vary by industrial sector.

Previous studies [8] [9] concluded that organisations experienced more operational impacts from ISO 9001 certification than business impacts. From the results of this study, those earlier conclusions can arguably only be applied to the service sector, with the remaining sectors in this study reporting a large variance in the perceived level of operational and business impacts.

The results of this study show that UK organisations, in the most part, seem motivated to obtain ISO 9001 certification due to customer demands with business impacts being a direct result of ISO 9001 certification.

A. Limitations

The study is limited by the sample size, 111 of the total number 44 849 [5] of ISO 9001 certified organisations in the UK and may impact on the applicability of the findings to the larger UK population of certified organisations.

A further limitation can be seen with the service sector grouping, which consists of various types of service organisations. Although all service based, the specific sectors of these organisations are many and diverse. Thus, the results may be limited by the service sector grouping being too generalised.

There was evidence of response bias in the survey with many larger organisations not responding to the invitations to participate in the study. Response bias was also seen in the qualitative phase with only one construction organisation being willing to take part.

Data collected in both phases were based on perception. This is an issue as many of the organisations were certified for a number of years; the median years of certification for manufacturing was 20 years. The accuracy of data regarding the motives and impacts of certification may thus be questioned unless the information was taken from organisational records.

B. Further Work

Recommendations for further research include:

- Further research on the motives for obtaining, and the impacts of. ISO 9001 certification in UK organisations;
- Research on the ISO 9001 implementation process of UK organisations and whether these differ due to industrial sector;
- Comparative research on the differing service sector to assess if the motives for obtaining and the impacts of ISO 9001 certification vary due to a specific service sector market.

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