

Benefits, barriers and pitfalls coming from the ISO 9000 implementation: the impact on business performances.

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Abstract: - Total quality management is from a decade an important and useful organizational system for increasing companies' competitiveness, by optimizing processes with a particular focus on the customer. Among all the methodologies, ISO 9000 certification is one of the most common and recognized approaches for the benefits of the companies that decide to implement it. Several studies have been conducted in literature, presenting some important impacts of the ISO 9000 on the companies' performances. Due to the vast number of works, a classification of the main impacts of ISO 9000 on the principle business performances is needed. The findings coming from the literature review analysis are therefore validated through a survey extended at 366 companies. The resulting information of the investigation are coherent with those studied in literature, even if some key aspects are extremely focused on a restricted set of impact areas. The investigation allow the author to identify the main impacting dimensions of ISO 9000 on the performances of the companies. Moreover the barriers and pitfalls for a successful ISO 9000 certification are presented, furnishing details for overcome these issues.

Key-Words: - ISO 9000, Business Performance, Literature review, Survey.

1 Introduction

Despite substantial literature on the ISO 9000 standard, there is still much debate concerning the standard's impact on firm performance, competitiveness and operations management. The extent to which organizational performance can effectively be improved through ISO 9000 certification remains an important issue [1]. Although the number of firms that want to implement ISO 9000 quality management system is increasing day by day, many of them increasingly started questioning the link between ISO 9000 and firm performance. In addition, despite the increasing amount of research on ISO 9000 quality management system, most of it is not empirical and mostly case studies, which are merely descriptive or prescriptive [2]. In general, studies investigating the effects of ISO 9000 on performance have shown mixed results. Some studies showed a positive effect, while others did not. However, recent longitudinal studies found strong evidence that ISO 9000 does lead to improvements in performance

[3]. Creating, maintaining and improving the system of operating quality management, following the guidelines and requirements of the ISO 9000:2000 standards, serves as a rational operation tool giving grounds to systematization and to a comparison between both sectors, private and public [4]. Due to this debated aspects, this paper tries to highlight the benefits and impacts of ISO 9000 on specific companies' performances. The research starts from a literature review of the research topic, through which the authors have been able to delineate the most important dimensions of the main performances affected by the ISO 9000 implementation. The internal and external impacts on businesses are investigated through a literature review approach and then deepened with a survey extended to 366 companies. The barriers and pitfalls to the implementation of a successful ISO 9000 certification are then analyzed in order to understand which are the possible causes against a possible way for a competitive business advantage.

2 Research methodology

The research methodology lies in a literature review conducted by the authors and performed using the ISI Web Of Knowledge databases. By looking for articles through a key-words search (ISO 9000 and business performance in the titles, abstract and key-words), the authors collected 3.024 articles. From them, 154 articles have been selected since their fitting with the including criterion and the scopes of this research. The impact of ISO 9000 on the business performance has been the main research field explored by the authors.

A classification criterion for grouping the articles at the base of the research has been selected according with the proposal of [5].

By adapting the classification suggested by [5] and used for describing the main benefits coming from the implementation of ISO 9000, the authors developed a new grouping criterion, in order to describe which are the main impacts of ISO 9000 on companies' performances. For this scope and according with [6], the impacts on business performance have been classified in:

1) external and 2) internal to the company.

Particularly the external one is divided by impact on:

- a) international trades, b) suppliers,
- c) customers, d) stakeholders and, e) market.

The internal one is divided by impact on:

- a) quality system, b) product/service,
- c) competitiveness, d) financial performance,
- and e) human resource/organizational climate.

A discussion for each of the aspects above are presented in the next paragraph, supported by the literature review conducted by the authors.

3 Impacts of ISO 9000 on business

Although some authors expressed the consensus that external impacts seem to be far more important compared to the internal ones [7], [8], and other works affirmed that the majority of the benefits obtained with the certification are of an internal nature [9]. Due to this duality, it's important to consider both the nature of the potential impacts coming from the ISO 9000 implementation. Thus, the impacts can be clustered into two main subset: 1) external to the company and, 2) internal to the company.

3.1 External impacts

Five types of impacts could be summarized under this group.

3.1.1. Impacts on International trades

The adoption, around the world, of the quality standard ISO 9000 has provided a common ground for the assessment and measurement of the suppliers in order to bring down one of the barriers to international trade. Therefore the standard ISO 9000 become a distinct advantage in a national and international trade [5].

Many studies ([10], [11], [12], [13], [14], [15]) have shown that from a side commercial aspects constitute a determining factor in the decision to implement the standard and from the other side an aspect strongly influenced by the ISO 9000 certification. In many cases in fact, actual or potential customer requirements clearly represent sufficient motive to adopt ISO 9000. In this way, the ISO 9000 certification has certainly become a passport to doing business in many countries. This represents an important aspect for growing sales coming from the ISO 9000 certification.

3.1.2. Impacts from/on Suppliers

There are two aspects impacting the suppliers: the benefits coming from their certification and those coming instead from the supplied company.

For the first, ISO 9000 standards are internationally recognized and designed to demonstrate that the supplying organization has achieved a basic level of quality by the formalization and documentation of its quality management system [16]. The supplier-related issues that are relevant to ISO 9000 are ([17], [18], [19]): organizations seek assurance of quality from suppliers; suppliers are chosen on the basis of quality; there are minimal misunderstandings about orders placed with suppliers; quality of supplied products/services are assessed; materials from customers and suppliers are all treated in the same way; and suppliers that are subcontractors are suited to the tasks they perform.

For the increasing suppliers' interest towards a certified company, [20] proposed that ISO 9000 certified companies (in the US industry) expect their quality systems will lead to improve supplier relations. [21] studied ISO 9000 certifications as signals of quality and found that suppliers that were ISO 9000 certified grew faster than non-certified organizations.

3.1.3. Impacts on Customers

Adoption of ISO 9000 system yields visible and concrete benefits to organizations in the form increased customer satisfaction [22]. The positive impact on customers has been described in several other works ([8], [23], [24], [25], [26], [27], [28]),

all arguing that certified companies: are aware of customer requirements; have processes/activities that are designed to increase customer satisfaction; have systems to avoid misunderstandings about customer orders; systematically review contracts; and have systematic processes for handling complaints.

A more cautious analysis is presented in the investigation conducted by [23], in which ISO 9000 represent: the response of the clients' requirements (34 per cent of the analyzed cases), access into new markets (21 per cent), improvement in customer relations (18 per cent), improvement in services to customers (16 per cent) and minimizing customer audits (8 per cent). In respect of the influence of the standard in the aspects related to external customers of the company, three points are emphasised: the increase in customer satisfaction, the decrease in the number of complaint, the rise in repeat purchasing by the customers. Even if it must be said that one of the motivations for companies to be certified is that it is requested by the customers [29], the impact of ISO 9000 on customer is evident in literature.

3.1.4. Impacts on Stakeholders

The use of ISO 9000 certification is associated with an increase in financial performance that bring benefits to companies' stakeholders [30]. The positive effect of ISO 9000 certification on a firm's success is even reinforced in a situation where firms otherwise suffer from reputation problems. Firms based in an environment associated with low quality, which show their compliance with widely accepted quality standards, should have proportionately higher resource inflows than firms which are located in an environment of firms which are considered to produce high quality. If trust in the quality of a firm's product has already been established, ISO 9000 certification should result in a lesser amount of additional legitimacy and resource inflows than the certification of a firm for which this certification means a great shift in the trust of stakeholders [31].

3.1.5. Impacts on Market

A source of performance improvement from adopting the ISO 9000 program arises from increases in revenue as ISO 9000 certified firms are able to access new markets [32].

The fact that ISO 9000 series certification may be important in gaining access to markets has been recognized in several works ([7], [24]).

According to a study carried out in the UK [23], some benefits of certification can be summarised as: one important marketing implement

which helps market relations, increases the possibility of obtaining new contracts and considerably helps to enter new or international markets.

Another important aspect related to the ISO 9000 certification is linked to the analysis of the faster reaction to the market request [34].

3.2 Internal impacts

Five types of internal impacts have been identified, and described below.

3.2.1. Impacts on the quality system

ISO 9000 certification provides a structure around which build a program of world class quality. This formal structure has the peculiarity of being verifiable and measurable. This formal system of quality guarantees the improvement of all aspects within the company that ensure the quality of the product or service to the customer [5]. The ISO 9000 certification and audits allow companies to constantly update and control their quality systems. In particular, the quality managers should be committed to quality; should regularly review the quality system; ensure that quality system is continually improved; and use the internal quality audits to assist in evaluating the effectiveness of the quality system ([35], [36], [37]).

3.2.2. Impacts on product/service

As stated by [38] "the most important factor affecting performance is the quality of products and services relative to those of the competition, there is a direct relationship between customer satisfaction and profitability". One of the major significant improvements reported as an influential impact coming from the ISO 9000 is related to the improved product/service quality [7]. [8] this aspect, affirming that ISO 9000 facilitates the improvement of the product quality as well as the satisfaction of customers requirements. Many other works sustain this consensus, i.e. the product improvement and enhanced service quality and, more broadly, improvement in business productivity ([39], [40], [41], [42], [43], [44]).

Other aspects highlighted by [23] in which the standard has had positive influence are: the possibility of improving the level of delivery time, the consequential savings in production cost and finally the reduction of lead time. By standardizing the ISO 9000 program structured and detailed procedures provide a deeper understanding of the processes involved in the supply of product or service. Written procedures and instructions will

provide a better process thus reducing the variability of product [45].

3.2.3. Impacts on financial performances

Probably the most debated aspect in literature is the impact of ISO 9000 on financial performances. Generally a large body of literature studying the effects of ISO 9000 shares the general assumption that ISO 9000 adoption directly improves an organization's financial performance ([46], [47], [48], [49], [50]). Existing research further suggests that the increased efficiency and sales from ISO 9000 will translate directly into improved profitability through cost reductions and revenue increases [51]. In line with these predictions, some research has indeed found evidence of the expected improvements in financial performance from ISO 9000 ([46], [33], [52], [53]). Benefit of the certification is the influence on the financial aspects of the company. Following a case analysis proposed by [23] in the 58% of the analyzed cases it was thought that the standard had allowed considerable increase in market share, as well as an increase in the upward trend of sales of the company. Other financial indicators as productivity (income per employee) are used to analyze the contribution made by ISO 9000 on business [3] and the result is that certified companies performed better than non-certified on the performance results. Common financial indicators positively influenced by ISO 9000 certification are return on assets (ROA) and return on sale (ROS) [54].

3.2.4. Impacts on human resources/organizational climate

Many authors ([55], [56], [57], [58]) have stressed employee involvement and other human elements as the keys to successful implementation of the ISO 9000 system.

[59] observed that ISO 9000 processes bring about visible changes in such areas as human resource development, involvement of workforce, teamwork, goal-orientation, and openness of communication. In a survey conducted among 682 organizations, [60] found that commitment to ISO 9000 implementation brought about significant improvements in the attitudes and behaviors of the senior executives in those organizations. The results of the study indicate that ISO 9000 system can transform and reconfigure organizational climate and that it can enhance the positive components of organizational climate while controlling and keeping the negative ones under check [22].

3.2.5. Impacts on competitiveness

Efforts of continuous improvement through defect prevention process, as presented in the series of standards ISO 9000, helps companies achieve their objectives and meet the expectations of their customers. Another factor promoting the ISO 9000 series [61] is the desire to improve internal efficiency by reducing waste and non-value added tasks. The ISO 9000 series is seen as tangible and has meaning and that forces organizations to develop manuals and procedures and improve organizational discipline. It's also clear what should be done to meet the requirements of the ISO 9000.

The competitiveness is increased by the ISO 9000 under the dimensions investigated in the previous points both for internal both for external aspects.

5 Results from the survey

An interesting analysis has been conducted considering a sample of 366 companies, heterogeneous in sizes, sectors, scopes, missions, and not only manufacturing ones. In particular, Figure 1 represents the variety of the sectors of the companies involved in the survey. The survey aim is the evaluation of the benefits of ISO 9000 implementation, classified depending on the internal and external impacts, described in the previous paragraph. The structure of the survey follows the analysis conducted through the literature review and thus it analyzes the internal and external dimensions of ISO 9000 impact on the industrial performances. The results of the survey lead to considerations similar to those already done in the previous paragraphs, however it poses the attention on some key aspects for both the internal and the external dimensions of impact. These focal points are the most important areas of impact, as felt by the companies. A synthesis of the survey follows.

The satisfaction of the certified company on the ISO 9000 is demonstrated by the answers furnished by the sample, since almost the 94% of the companies affirms that they are from "on average" to "highly" satisfied of the certification. This is shown in Table 1, where the scores (1-6 low, 7-8 medium, 9-10 high) are given by the companies divided by sector. It represents the degree of satisfaction expressed by the companies towards the ISO 9000 after the certification.

The impact of ISO 9000 certification is perceived by the companies as represented in Table 2, in which the distinction between internal and external benefits is highlighted. It is important to note that companies have had the possibility to

answer more than one indicator, so the sum of the partial totals could not match the overall total. The satisfaction of the surveyed companies towards the ISO 9000 is reflected also by the fact that the interviewed suggest to the competitors or to the same sector companies to undertake the certification actions. This is explicated in Table 3. The total number of companies are in this case 363, since 3 companies didn't want to answer to this question. The 90% of the companies have given a 7-10 score (medium-high evaluation), demonstrating the degree of satisfaction toward the ISO 9000.

At last, a final aspect investigated by the survey is the will of the surveyed companies in maintaining the certification in the next years. At the question "Do you believe to maintain the certification along the years?", the interviewed companies have answered as shown in Table 4.

1 to 6 is low, 7-8 medium, 9-10 high evaluations. The companies participating in this investigation have been 358, since 8 didn't want to furnish an answer.

As suggested by the survey, the companies are in general extremely satisfied to be certified and most of them would like to maintain the ISO 9000 certification. They believe in the benefits coming from it and they would even suggest the certification to their competitors. The impacts the company directly feel are both internal and external.

For the first, the two main dimensions positively affected from the ISO 9000 implementation are:

1. Improving operating efficiency;
2. Better control of business operations.

For the second, real impacts are perceived on the following dimensions:

1. The customer
2. Company image
3. Useful in tenders
4. Sales or market share

It is interesting to note that the companies feel the internal impacts more evident than the external ones. This means that ISO 9000 have often been adopted for a real improvement of the internal processes or operations management. External aspects such as the customer satisfaction improvement or the economical benefits are perceived as less important and with weak relationship with the ISO 9000 certification.

The next paragraph tries to highlights the most common barriers and pitfalls for the ISO 9000 implementation.

4 Barriers to implementations and Pitfalls

ISO 9000 certification may also present barriers for its implementations and consequent pitfalls. It's useful to explore the barriers for ISO 9000 implementation and identify how these barriers can be overcome, in order to allow the companies to improve their performances.

In a survey conducted by [62] the audit's side barriers for a correct and successful ISO 9000 implementation have been identified in four types of obstacles: a) lack of commitment for some certifying bodies, b) excessive competition between certifying bodies, c) offering of a total packaged service from consultancy to certification by certifying bodies.

[62] showed that there are five main barriers from the company's side:

- 1) Short-sighted goal for "getting certified"
- 2) Over-expectation on ISO standard
- 3) Mandatory requirement (not wholehearted commitment) in some industries
- 4) Following others (the trend) in certification
- 5) Lack of necessary guidance for certification

[63] proposes other barriers (especially for the 1994 to the 2000 version of ISO) for ISO implementation. Following her classification the major barriers are:

- 1) The need to change culture,
- 2) The adaptation of "paper certificates",
- 3) Unrealistic requirements and ritualistic implementation
- 4) Poor adaptation of the previous standard
- 5) Conventional quality audit process

Factors acting as barriers that are most frequently faced by the local organizations can be classified [64]: human resource, attitude towards quality, management, culture, interdepartmental relations, machines and equipment, materials, quality related information, method, training and finance.

Some problems encountered in certification include the failures to establish adequate monitoring programs, to follow set procedures and to carry out appropriate management reviews of the new system as well as unclear authorisation.

From a survey conducted by [65] the most common obstacles to ISO 9000 implementation are:

organizational - “lack of understanding of its importance by all departments” and “unwillingness to change from the existing system” - followed by a procedural one - “difficulty in understanding the ISO 9000 requirements”. Over 74 per cent of the companies reported experiencing no resistance within their organizations; only 4 per cent experienced active resistance (such as vocal protests). In only 6 per cent of the companies was certification perceived as being a threat to job security.

5 Conclusions

Several studies have highlighted the benefits and positive influences of ISO 9000 on business performances. This paper tries to furnish a clear classification of the main impacts of ISO 9000 standard on the certified companies' performances.

The impacts have been classified, adapting the classification proposed by [5], in internal and external to the company. Not only financial performances have been taken in consideration, but also non-financial indicators such as for instance the impact on the stakeholders, customers and suppliers, or the impact on product and service.

The survey conducted on 366 Italian companies highlights which are the main key aspects influenced by the ISO 9000, as perceived from the interviewed firms. Companies recognize both internal and external impacts, even if they feel more benefits coming from the increased operating efficiency and operations management and from the increased attention to the customer and sales. This is perfectly coherent with the ISO standard.

Following this research an exploratory survey should be conducted in further studies, in order to validate the presented research hypothesis. For these developments, it could be interesting to take in consideration the dimensions suggested by [66] for further analysis on how the ISO 9000 could influence the impacts of the firms' performances:

- quality control measures,
- standards and procedures for quality assurance and
- total quality management (customer focus; continuous improvement; quality assurance of internal processes; process orientation; and prevention instead of inspection).

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Appendix

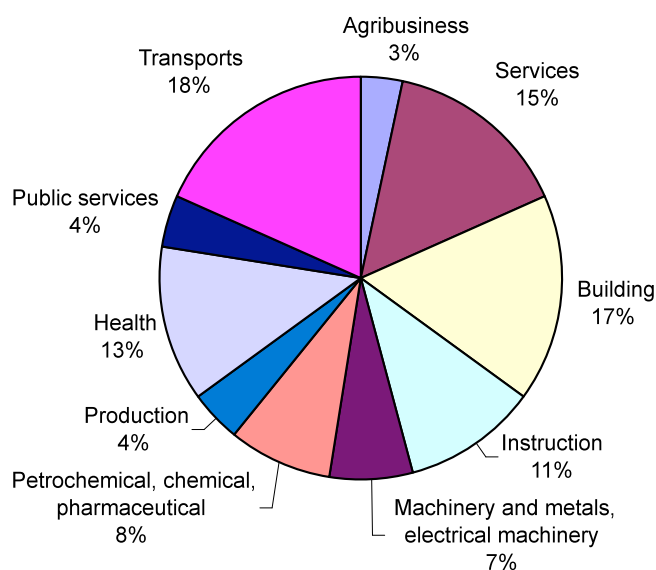


Figure 1: sectors of the companies involved in the survey.

Table 1: degree of satisfaction of the companies grouped by sector.

Answer/Value	TOTAL	Agribusiness	Services	Building	Instruction	Machinery and metals, electrical machinery	Petrochemical, chemical, pharmaceutical	Production	Health	Public services	Transports
1	1	0	0	0	0	0	0	0	1	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0
4	2	0	1	0	0	0	0	0	0	0	1
5	5	0	1	0	0	0	2	1	0	0	1
6	16	2	5	3	1	0	0	1	1	1	2
7	48	1	4	5	5	5	3	2	8	4	11
8	144	5	22	27	17	10	11	7	10	3	32
9	63	3	8	8	5	5	3	2	15	2	12
10	87	2	13	19	10	4	10	3	10	5	11
TOTAL	366	13	54	62	38	24	29	16	45	15	70

Table 2: perception of the impact of ISO 9000 on performances by the surveyed companies

	TOTAL	Agribusiness	Services	Building	Instruction	Machinery and metals, electrical machinery	Petrochemical, chemical, pharmaceutical	Production	Health	Public services	Transports
OVERALL TOTAL	366	13	54	62	38	24	29	16	45	15	70
INTERNAL BENEFITS (TOTAL)	224	9	34	34	23	12	17	10	33	10	42
Better control of business operations (management, processes ...)	53	1	11	7	6	3	4	2	6	3	10
Improving operating efficiency (improvement of the organization, order and clarity)	173	8	24	26	17	9	13	10	26	8	32
Improves the organization and supervision of staff	2	0	0	0	1	0	0	0	0	1	0
Improvement of quality	10	1	3	0	1	1	0	0	1	0	3
Improvement of professionalism	10	0	0	2	0	0	2	0	1	1	4
EXTERNAL BENEFITS (TOTAL)	111	4	20	20	6	7	10	3	9	8	24
The customer is more satisfied	36	2	7	1	4	0	3	2	3	3	11
Lets follow the evolution law	6	0	0	1	0	2	0	0	1	1	1
Useful in tenders	30	0	7	12	1	2	0	0	1	4	3
Useful for economical facilitations	4	0	1	1	1	1	0	0	0	0	0
Is useful for increasing sales or market share	11	1	1	4	0	0	2	1	1	0	1
Improvement of company image	31	1	5	2	1	2	6	0	3	1	10
Helpful for improving relations with the public sector	1	0	0	0	0	0	0	0	0	0	1
Useful for working abroad	0	0	0	0	0	0	0	0	0	0	0
SPECIFIC ASPECTS OF THE CERTIFICATION (TOTAL)	5	0	1	2	0	0	0	0	0	1	1
Increasing of the security control	4	0	1	2	0	0	0	0	0	0	1
Increasing of control of the environmental impact	1	0	0	0	0	0	0	0	0	1	0
Increasing of the hygiene	0	0	0	0	0	0	0	0	0	0	0
It is usefulness in the industrial waste management	0	0	0	0	0	0	0	0	0	0	0
NONE (TOTAL)	49	1	4	10	8	5	3	3	6	1	8

Table 3: “Do you suggest to undertake the ISO 9000 certification to a company of your similar sector?”

Answer/Value	TOTAL	Agribusiness	Services	Building	Instruction	Machinery and metals, electrical machinery	Petrochemical, chemical, pharmaceutical	Production	Health	Public services	Transports
1	5	0	1	0	0	0	1	0	2	0	1
2	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0
4	2	0	1	0	0	0	0	0	0	1	0
5	14	4	3	1	1	0	0	3	0	0	2
6	16	0	3	2	4	1	1	0	3	0	2
7	55	0	5	10	7	6	6	2	2	4	13
8	101	3	17	16	8	9	8	4	11	3	22
9	51	1	8	11	5	2	4	4	6	2	8
10	119	5	16	21	13	5	9	3	21	5	21
TOTAL	363	13	54	61	38	23	29	16	45	15	69

Table 4: “Do you believe to maintain the certification along the years?”

Answer/Value	TOTAL	Agribusiness	Services	Building	Instruction	Machinery and metals, electrical machinery	Petrochemical, chemical, pharmaceutical	Production	Health	Public services	Transports
1	4	0	0	0	2	0	0	0	2	0	0
2	1	0	0	1	0	0	0	0	0	0	0
3	1	0	0	0	0	0	0	0	0	1	0
4	1	1	0	0	0	0	0	0	0	0	0
5	7	0	2	1	0	0	2	0	1	0	1
6	9	0	1	1	3	1	1	0	0	0	2
7	17	0	5	3	2	1	0	0	3	1	2
8	61	0	6	15	5	4	3	2	7	5	14
9	47	1	7	7	7	2	4	4	6	0	9
10	210	9	32	34	18	16	18	10	25	8	40
TOTAL	358	11	53	62	37	24	28	16	44	15	68