

IMPACT OF ISO 9001 IMPLEMENTATION ON FINANCIAL RESULTS: A CASE STUDY ON PUBLICLY TRADED COMPANIES

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Abstract: Given the currently highly competitive market, for companies and organizations that intend to maintain themselves and seek access to new markets, obtaining ISO 9001 quality management certification is extremely important, providing a series of internal and external benefits to the organization. that implements this set of technical standards. In this sense, it is convenient to assume that the acquisition of certification will impact the company's results and financial performance, giving rise to the objective of this article: Collect financial data from companies in a period prior to which certification occurred and compare them with the later, by calculating fundamental indicators P/VPA, VPA, EV/EBITDA, ROA and PSR. Based on the analysis and discussion carried out, it is possible to highlight the influence of quality certification in the case of Pão de Açúcar and Amazon, two of the companies analyzed, which presented, respectively, continuous growth during certification, and a rapid recovery from the drop significant impact that had been suffered after the year of certification. In the case of the third company Usiminas, however, whose steel sector was seriously compromised during its certification period, it became clear that the benefits guaranteed by ISO 9001 are not sufficient to protect the company's financial results in relation to the external market.

Keywords: Quality Management, ISO 9001, Financial Indicators, Public Companies

INTRODUCTION

In *Liquid Modernity* (1999), sociologist Zygmunt Bauman uses the title of the work as a term to describe today's globalized society, through an analogy between the fluidity of liquids with greater flexibility and individuality in interpersonal relationships, which have become pronounceable to from the second half of the 20th century (RIGOTTI, 2015).

From then on, the constant updating of companies in response to the fluidity of society becomes extremely necessary, as competition and rapid socio-cultural changes directly impact market competitiveness (RIGOTTI, 2015). This way, ISO 9001 certification has become, in practice, a necessity for organizations seeking access to new markets, guaranteeing a series of internal and external benefits, which include, for example, increased productivity, improved organizational image and reduced the rate of defective products (NADAE, OLIVEIRA & OLIVEIRA, 2009).

The expression ISO 9001 refers to a set of technical standards that define a quality management model for organizations, created by the International Organization for Standardization (ISO), an entity that currently brings together around 189 countries. It is responsible for promoting the standardization of products and services, in a process of seeking continuous improvement (US CONSULTORIA, [s.d.]). Figure 1 shows the evolution of certifications.

As it can be seen in the graph in Figure 1, taken from the Certificate Management System (Certifiq), there is an increasing number of total certifications over time, which implies the importance of a quality certificate for companies.

Considering the benefits that ISO 9001 certification confers, it is appropriate to state that the indicators, both qualitative and quantitative, relating to the company will be impacted. The quantitative indicators benefited include the reduction of waste, material consumption and product variation (ABNT, 2000), therefore, it is convenient to assume that ISO 9001 certification will impact a company's financial-economic results (SILVEIRA, 2013).

In this sense, this article aims to evaluate financial indicators in the period before and after obtaining quality certification by

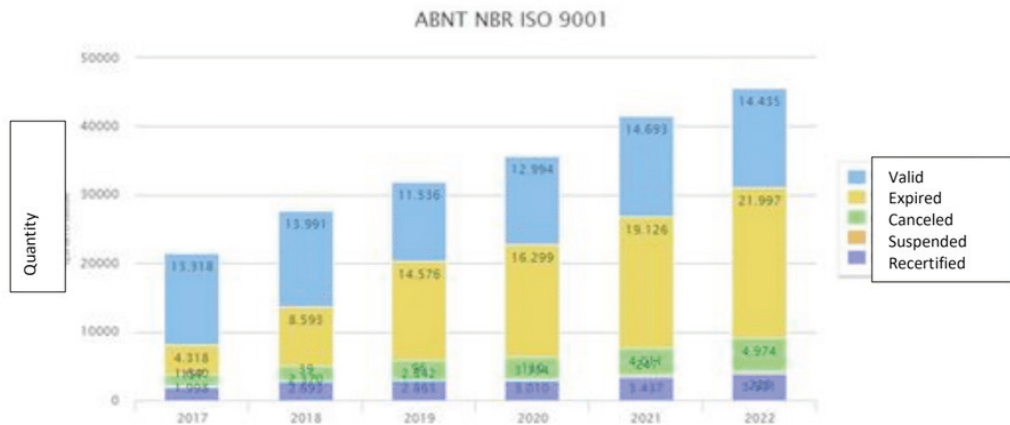


Figure 1. Evolution of the number of ISO 9001 certifications granted (INMETRO, 2022).

publicly traded companies, whose access to the necessary information is facilitated. It will cover three different companies in different sectors, namely:

- Pão de Açúcar, in the food sector, whose first ISO 9001 certification was obtained in 2012;
- Amazon, in the digital retail sector, whose first ISO 9001 certification for the Amazon Web Services service was obtained in 2014;
- Usiminas, in the steel sector, whose first ISO 9001 certification for the unit in Serra Azul (MG) was obtained in 2011.

THEORETICAL FOUNDATION

Quality management is a set of coordinated activities to direct and control an organization, encompassing planning, control, quality assurance and improvement. For organizations to implement quality management in their processes, it means prioritizing some principles, such as customer focus, continuous improvement and teamwork aimed at improving the quality and services offered (ZU, 2009).

Quality management practices are certified, within companies, by the implementation of Quality Management Systems (QMS) (NBR

ISO 9001, 2008).

ISO 9001

Quality management can be formalized through certifications, such as ISO 9001, a management system that aims to guarantee the optimization of processes, greater agility in product development and more agile production in order to satisfy customers. Among countless rules and good practices on the quality management system, ISO 9001 defines some quality principles. In the old version (ISO 9001:2008), there were eight quality principles, however, in 2015, it was updated with changes. such as the departure of the quality manual, the departure of preventive action and risk management, one of the significant changes was the reduction of the eight principles, currently seven, they are:

- Customer focus;
- Leadership;
- People engagement;
- Process approach;
- Continuous improvement;
- Making decisions based on facts;
- Relationship management;

Zeng, Tian and Shi (2005) state that obtaining ISO 9001 certification is the first

step towards organizational excellence, for this reason, many companies end up seeking to obtain certification as a marketing strategy and pressure from competitors and consumers (NADAE, OLIVEIRA and OLIVEIRA, 2009).

Among the benefits ensured by quality certification, there are a series of benefits classified as external and internal (NADAE, OLIVEIRA and OLIVEIRA, 2009):

- Access to new markets, improved corporate image, increased market share, increased and improved relationship between supplier and customer, increased satisfaction, communication and customer perception of the company and the quality of products;
- Increased productivity, reduced rate of defective products and non-conformities, increased product quality and improved process documentation.
- Therefore, there are several indicators, qualitative and quantitative, that are impacted by certification (ABNT, 2000). For the scope of this article, the following quantitative indicators must be considered:
- Reduction of waste and product variation, reduction of material consumption and standardization of components and equipment.

FINANCIAL INDICATORS

Following another path, to carry out the analysis of the situation of a company in a given period, it is possible to use several existing indicators in the financial-economic sector, among them: EV/EBITDA, ROA, VPA, P/VPA and PSR.

EV/EBITDA is composed of two main components, Firm Value, or Enterprise Value (EV), and Earnings Before Interest, Taxes, Depreciation and Amortization, or

Earnings Before Interest, Taxes, Depreciation and Amortization (EBITDA) (WAINBERG, 2018).

EBITDA is an indicator that consists, as the name suggests, of the profit obtained by a company before taxes, fees, depreciation and amortization are taken into consideration. (WAINBERG, 2018). EV, on the other hand, is made up of three main components:

- Market Value (VM);
- Net Debt (DL);

According to the following Equation:

$$EV = VM - DL \quad (1)$$

This provides an approximate value of how much it would take to purchase all the assets of a given company.

Therefore, this indicator allows us to compare different companies regardless of their location, main currency, structure and factors that do not affect the company's cash flow (WAINBERG, 2018).

On the other hand, the ROA indicator, or Return on Assets, is an indicator capable of measuring the power of a company to generate returns according to the assets it owns. This indicator is calculated based on the company's assets, be they buildings, investments, machinery, inputs, among others (RICONNECT, 2020). This indicator can be calculated by dividing a company's net profit (LL) by its total assets (TA) and then multiplying by 100 to obtain the percentage value:

$$ROA = \frac{LL}{AT} \times 100\% \quad (2)$$

The VPA consists of the equity value per share of a given company, i.e., the total net worth of a company divided by its number of shares in the financial market (REIS, 2022).

$$VPA = \frac{VP}{\text{Number of investments}} \quad (3)$$

The P/VPA indicator is considered

an important indicator for analyzing an investment. It consists of the price of a share divided by the corresponding equity value. Therefore, it is able to show the investor how much the market is willing to pay for the net worth of a given company (REIS, 2017).

$$P / VPA = \frac{\text{Price of investment}}{VPA} \quad (4)$$

Like VPA, PSR (Price to Sales Ratio) is an indicator used in fundamental analyzes to evaluate the price of assets. Its main characteristic is to point out the sales performance of a given company (REIS, 2019). This indicator can be calculated simply by dividing a company's market value by its net revenue (NR):

$$PSR = \frac{VM}{RL} \quad (5)$$

METHOD

Initially, the companies whose data were used must be determined. To this end, as previously stated, preference was given to publicly traded companies, whose financial reports and other relevant information can be found more easily.

Thus, analyzing the companies that have their shares traded on the São Paulo Stock Exchange (Bovespa) and carrying out searches on their history in relation to quality management and the date of obtaining the first ISO 9001 certification, the three companies were selected.

Thus, with the definition of companies, data collection took place through the use of databases and the companies' own websites, which often have an Investor Relations (IR) section for publishing reports and financial results. The time interval was conveniently chosen according to each company, so that it covered the period before and after the implementation of ISO 9001.

The data of interest for calculating

fundamental indicators are:

- EBITDA;
- Net equity (PL);
- Net profit (LL);
- Net Revenue;
- Net debt;
- Number of Actions;
- Total assets/total assets;
- Market value.

Finally, from the data collected, the relevant indicators for analysis and comparison were calculated, with the help of Excel software. Furthermore, graphs were drawn using the same tool to better visualize the evolution of the indicators and compare the variation between the three different companies.

RESULTS

Based on the data collected from the companies' IR section, as well as additional data selected from the companies' financial-economic database, it was possible to prepare Tables 1 and 2.

Thus, it was possible to calculate the fundamental indicators through their respective equations, numbered Eq. 1 to 5, which are shown in Table 2 above. From this, for better visualization, the graphs present in Figures 2 to 6 below were drawn, corresponding to the different indicators calculated to carry out a better analysis of the variation of the indicator for each of the companies.

Evidently, in the case of companies of completely different sizes and from different sectors, it would be inconsistent to compare gross values, therefore, the item to be analyzed in the graphs below is the behavior and variation of indicators previously and following the company's certification.

Another point to be considered is the fact

	Pão de Açúcar			Amazon			Usiminas		
	2011	2012*	2013	2013	2014*	2015	2010	2011*	2012
EBITDA (R\$ million)	2816	3668	3814	8595	11571	28351	2650	1294	798
PL (R\$ million)	10094	11068	12712	391300	337131	1051081	19029	19014	18513
LL (R\$ million)	720	1156	1396	589,1	-566,4	1984,7	1583	404,1	-531
Net revenue (R\$ million)	46594	50924	57730	160071	209121	356329	12962	11902	12709
Net debt (R\$ million)	-1376	-777	1765	-14002	-8006	-7645	3445	3918	3700
Number of shares (thousand)	260239	263177	264691	9300000	9240000	9540000	317352	353101	434436
Ativo total (R\$ milhões)	33769	35396	38008	86341	128086	215607	31784	33360	32774
Market value (R\$ billion)	17,4	23,8	27,7	392,1	341,4	1051,1	19,4	10,3	13,0

Table 1. Data collected regarding companies during the periods covering their respective ISO 9001 certifications

Source: (GPA, 2012, 2013; MACROTRENDS, 2022; FINBOX, 2022; USIMINAS, 2011, 2012)

	Pão de Açúcar			Amazon			Usiminas		
	2011	2012*	2013	2013	2014*	2015	2010	2011*	2012
P/VPA	1,72	2,15	2,18	1,00	1,01	1,00	1,02	0,54	0,70
VPA	38,79	42,06	48,03	42,08	36,49	110,18	59,96	53,85	42,61
EV (R\$ milhões)	16024	23023	29465	378098	333394	1043455	22845	14218	16700
EV/EBITDA	5,69	6,28	7,73	43,99	28,81	36,80	8,62	10,99	20,93
ROA (%)	2,13	3,27	3,67	0,68	-0,44	0,92	4,98	1,21	-1,62
PSR	0,37	0,47	0,48	2,45	1,63	2,95	1,50	0,87	1,02

Table 2. Fundamental indicators calculated for all three companies

that, in 2011, the year in which the ISO 9001 certification of the company Usiminas is being considered, the steel sector was facing a crisis due to the lower sales volume of the steel industry and the continued pressure on costs. of its main raw materials (USIMINAS RI, 2011)

As described previously, the P/VPA indicator corresponds to the value that the market is willing to pay, at that moment, for the company's net equity. In this case, all three companies showed different behavior in relation to the indicator and their respective years of certification: Pão de Açúcar showed more significant growth in the exact year of certification, while Usiminas, which was in decline due to factors mentioned above, showed a recovery in the year following certification. Furthermore, Usiminas' P/VPA value of less than 1 indicates that the asset is being traded below its equity value.

In relation to Amazon, it is clear that its P/VPA indicator remained constant and close to 1.0, with the asset value equal to the equity value.

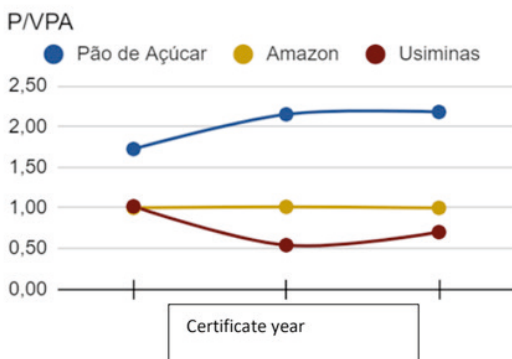


Figure 2. Variation in the P/VPA indicator of the three different companies with obtaining ISO 9001 certification

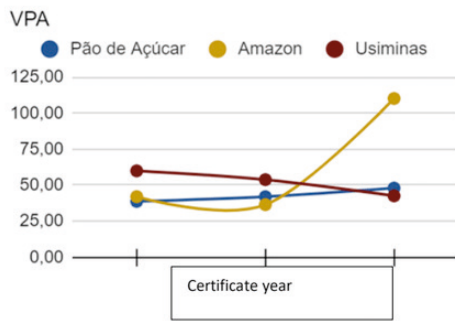


Figure 3. Variation in the VPA indicator of the three different companies with obtaining ISO 9001 certification

Overall, the VPA indicator is commonly used to determine whether a long-term investment would be beneficial or not. In general, high VPA values indicate that the company's assets are overvalued and with a downward trend, but it is possible to demonstrate that, with the certification obtained, Pão de Açúcar and Usiminas maintained their indicators approximately constant, while the Amazon showed even greater growth in the year following certification, demonstrating its appreciation in the market.

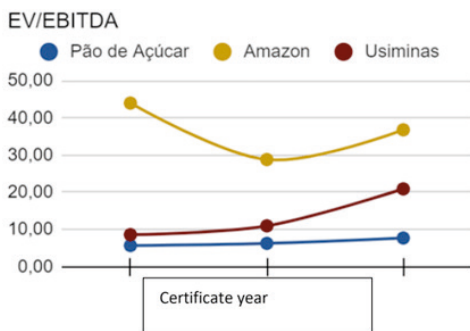


Figure 4. Variation of the EV/EBITDA indicator of the three different companies with obtaining ISO 9001 certification

As described previously, EV/EBITDA can be interpreted as a metric of EBITDA return on investment over EV. In general, high values of the indicator show that the return will take longer.

The fall or rise of the EV/EBITDA indicator alone does not allow many conclusions, and must always be associated with the variation of its components individually (EV and EBITDA), which can be done through Tables 1 and 2.

In the case of Uniminas, the increase in the indicator can be attributed to the decline in EBITDA, resulting from the dynamics of the steel sector previously described, given that, between the year of certification and the year after, there were no sudden changes in its market value or its net debt.

On the other hand, Amazon showed a drop in its certification year, corresponding to a desirable result. In the following year, however, there is a significant increase, but, analyzing the other calculated indicators and the variation in the EV and its components, mainly the significant increase in its market value, it is possible to associate the increase in the index with the market's optimism about the active in the period.

Pão de Açúcar also showed a slight growth, which can also be attributed to the increase in EV, but, in this case, the biggest variation was due to the value of net debt, therefore indicating that the company's debts reduced, which becomes a desirable outcome as well.

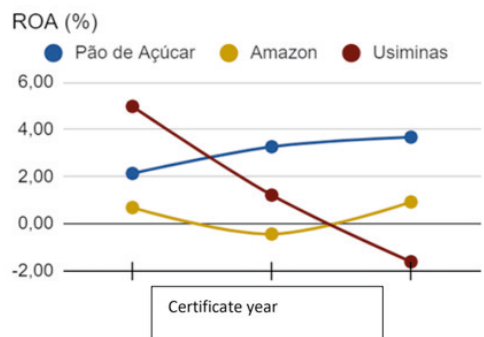


Figure 5: Variation in the ROA indicator, in percentage, of the three different companies obtaining ISO 9001 certification

As described previously, ROA represents the percentage of reais invested in the business

that returned a profit. As desired, Pão de Açúcar's index showed approximately constant growth during the period considered, and Amazon's, which was falling, was recovered one year after certification.

The Usiminas indicator, however, showed a significant drop, due to the sudden decrease in the value of net profit, used in the calculation, again reflecting the economic situation of the steel sector during the period of its certification.

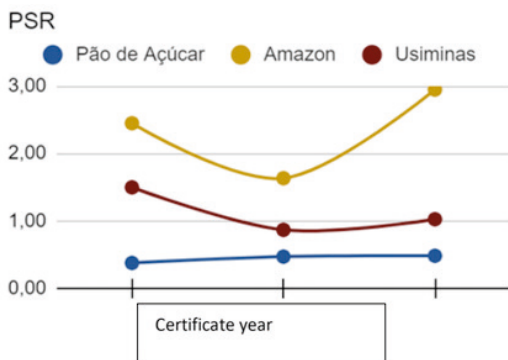


Figure 6. Variation in the PSR indicator of the three different companies with obtaining ISO 9001 certification.

DISCUSSIONS

As the acronym indicates, the PSR indicates the ratio between price and sales, which can be interpreted as how much it would cost the company in terms of sales. We have the same behavior of companies again: Slow but approximately constant growth for the Pão de Açúcar indicator, a recovery in the year following certification after a drop for Amazon and a drop for Usiminas, but showing recovery trends and appreciation in the year after certification, similarly.

Having this general overview of all indicators, it is possible to conclude the analysis of each company:

In the case of Grupo Pão de Açúcar, it is possible to identify a certain growth in the values of its shares and in the return on investment, indicating good growth in the

company. The certification maintained a slow and practically constant appreciation during the period analyzed.

As for Amazon, during the period of acquisition of the ISO 9001 certification for the Amazon Web Services (AWS) service, the company presented a significant loss, closing the year in which the quality certificate was acquired with a net profit of Negative R\$566 million. However, in the year following the acquisition of ISO 9001 certification, the company closed the year positive, with an LL of almost four times the debt presented previously. Furthermore, analyzing the indicators in general, it is possible to identify a very promising behavior for the company, especially when analyzing its asset value in the year following certification.

Finally, however, in relation to Usiminas, the company began to suffer a drastic decline regardless of the acquisition of an ISO 9001 certification due to the situation in the steel sector. However, it is worth highlighting that the certification obtained refers to only one unit of the company and not the entire business, but it is still possible to conclude that certification may be necessary, but is not sufficient to prevent the influence of semi-chaotic behavior of the market at that time about the company.

FINAL CONSIDERATIONS

Therefore, by analyzing the situations of companies before and after ISO 9001 certification, it is possible to obtain some conclusions regarding different companies.

Thus, with all the internal and external benefits that quality certification guarantees, directly impacting the qualitative and quantitative indicators as mentioned previously, the importance of certification in cases relating to Pão de Açúcar is evident, with the maintenance of stability and growth of company, and, mainly, Amazon, which

showed appreciation and a drastic increase in its indicators in the year after certification.

However, when dealing with large companies that offer different services and have multiple units, the quality certification of one of the services or one of the units is not sufficient to avoid negative influences from the external market, which was evidenced in the case study of Usiminas.

The conclusions obtained are aligned with

the expectations imposed by the quantitative indicators impacted by the certification: These are indices that adhere to Deming's PDCA (plan, do, check, action) perspective, therefore, they mostly refer to the internal production process. In the case of a crisis in the sector in which the company operates, quality certification, as expected, is not capable of reversing the situation within the company.

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