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ISO 9000 CERTIFICATION AND BUSINESS PERFORMANCE OF SELECTED PHILIPPINE COMPANIES

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This exploratory study aims to determine whether acquiring an ISO 9000 certification has a significant effect on Philippine business organizations' respective financial measures linked to performance. Based on a conceptual framework directly linking ISO 9000 certification to enhanced business performance, this study hypothesizes that if a business organization gets certified, then there will be a significant improvement in its operating efficiency and asset use efficiency, and a significant decrease in its dependence on external financing. The results of the study showed that there are improvements in some performance measures after certification, although not statistically significant. There are also some firms that showed declining performance. Majority of the firms displayed a decrease in the variance of their performance measures, indicating a more stable environment after certification. At this point, it can only be speculated that ISO 9000 certification – or even quality management in general – is not fully understood, appreciated, and implemented here as much as in other countries and as much as the literature suggests. This is something that needs to be considered, given the amount of resources devoted to preparing the firm for certification, acquiring of the certification itself, and the periodic audit checking needed to maintain the certification.

Keywords: ISO 9000, Financial performance, Philippine business environment

I. INTRODUCTION

ISO 9000 is a family of standards for the development of good management practices via the development of consistently good quality products. It has four basic steps: Say what you do. Do what you say. Record what is done. Improve, based on the results. (Delnista, 1999). It specifies requirements for a Total quality management (TQM) system overseeing the production of a product or service. It is not a standard for ensuring quality products or services. It attests to the process of production, and how it will be managed and reviewed. The ISO 9001, the most comprehensive of the series, encompasses quality assurance of firms' design, development, manufacturing, and installation and servicing functions (Delnista, 1999).

It has increasingly become a prerequisite for global competition. The European Community requires companies in some industries to be certified and to purchase from certified suppliers. These help international manufacturers and service providers develop a quality conscious approach (Clifford & Martin, 2002).

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Organizations are paying independent agencies substantial amounts to help them prepare for the certification. In the United States, one consulting firm offers a certification audit costing from $10,000 to $25,000 for small and mid-size companies. Maintenance audit costs averages about $5,000 to $10,000. The cost can be around $150,000 for the first year and $100,000 per ongoing year for personnel and direct audit costs. Another firm quotes that it can cost small- to mid-size companies $25,000 to $50,000 in consultant fees, training programs, auditing costs, and registration fees (Clifford & Martin, 2002). Worldwide, the number of ISO 9000 certificates is at least 510,616 as of 2001 (Pinar, Crouch, Yucel, & Guder, 2003).

Over 100 countries recognize ISO 9000 for quality standards and certification for international trade (Chase, Aquiliano, & Jacobs, 2001). The premise is that a certified company can increase quality and efficiency, performing and competing better, eventually delivering better profits, and increasing company value. While it has become a requirement for globalization, these are not always foolproof.

II. RESEARCH OBJECTIVES

This exploratory study shall determine if there will be significant improvements in firm performance after certification. It aims to put the debate on ISO 9000 to the test in the Philippine setting. There has been much discussion but little research on the topic, especially in the Philippine business environment. Since preparing and acquiring the certification requires significant resources, it is only logical to determine if there are significant returns on such an investment.

III. SIGNIFICANCE OF THE STUDY

This study shall provide a means for the industries to evaluate themselves after certification. It shall provide a means to signal certified firms if they are indeed implementing their TQM initiatives properly or not. Since there is little research on the topic in the Philippine setting, it shall also address this deficiency.

IV. LITERATURE REVIEW

General Arguments for ISO 9000

ISO 9000's strongest point is its relationship to TQM. To properly implement a strong TQM system, one must first know everything that is happening within the company. One can then properly analyze the situation and come up with the desired system. Once TQM is in place, the company can expect to offer quality products and/or services.

ISO 9000 provides a tried and tested framework for taking a systematic approach to managing business practices to consistently turn out quality products. Quality products are easier to support and maintain, and contributes to customer satisfaction (Chase et al., 2001). The

certification can serve as a key marketing tool. Certification is deemed as an official acknowledgment of a company's compliance to and its implementation of a smooth TQM system. Also, since this is recognized globally, obtaining a certification can mean that the company is also moving towards globalization. Its main goal is to harmonize standards around the world, which, as widely claimed, promotes trade and therefore global welfare more efficiently (Grajek, 2004).

The certification is granted and verified by independent, third-party entities, giving it credibility. It also publicizes the type and degree of the TQM practice and the date of certification. This gives a point of reference for comparison and evaluation (Morris, 2003).

General Arguments against ISO 9000

Much of the criticism of ISO 9000 is on its implementation. Some firms opt to take the certification wholeheartedly, changing and restructuring its processes and procedures. Others just simply comply with the minimum requirements, making sure that everything that is being done, regardless of appropriateness, are documented. It simply became an exercise of "passing a test", instead of developing quality processes.

The certification itself does not even reflect the actual level of quality management practices that a company currently uses. Two certified companies may not have the same TQM practices. One firm may have much higher TQM practices than the other (Morris, 2003).

There have been some employees who believe that the certification efforts have contributed significantly to the failure of the business. The certification has been seen as an end. Some organizations believe that it is reasonable to pay some price for certification. However, if the process measures the right parameters, certification should involve no extra work for organizations that already have quality processes in place (Murphy, 2002).

Another criticism is its role in TQM. Quality is mostly an ambiguous concept. If the quality department decides that extra documentation is required, the development team may feel that the extra documentation does not add value to the product. It is far too easy for the former to portray the latter as lazy and to claim that without this documentation, they would fail certification. The requirements are so vague that it is impossible to say whether a missing document will be considered a non-conformance. There will be instances where one auditor would allow it and another would not. If the product has too many faulty characteristics, the root cause will never be identified as excess paperwork caused by the quality department (Murphy, 2002).

The catch is that ISO 9000 certification, by its nature, can inhibit changes. Any changes in the certified documentation will require justification and sign-off. If the change is within a document that is only reviewed and updated occasionally, the wait could be far longer. There are some departments, such as R&D, whose nature is that procedures require much iteration to get them right (Murphy, 2002).

Globally, critics claim that ISO 9000 certification is a market barrier to entry. It has been used as a standard to assess performance in government procurements and in setting of minimum quality requirements for imports. This raises a concern that the standard is mainly a tool for protecting domestic markets (Grajek, 2004).

Previous Studies on the Effects of ISO 9000 Certification

Anecdotal evidence suggests that firms can achieve internal improvements, or that certification can help firms maintain or increase their market share, or both. Others argue that the standard is too generic to cause improvement, but can be seen as a good

management tool. An empirical study in the United States by Corbett et al. (2004), however, determined that three years after certification, firms displayed strongly significant abnormal performance.

The 1991 International Quality Study of the American Quality Foundation studied over 500 organizations in the USA, Canada, Germany, and Japan. It concluded that some practices, particularly supplier certification and process improvement, did have a significant effect on performance. Similar findings were reported by a 1994 Australian Manufacturing Council (AMC) study of 1,300 manufacturing sites quoted by Terziovski, et al. (n.d). More than 50% of the certified sites agreed that the certification process had been a significant factor in improving business performance. The AMC cautioned that certification is not a substitute for delivering high quality products and services. Certification could risk systematizing some poor practices.

The study, "ISO 9000 registration's impact on sales and profitability: A longitudinal analysis of performance before and after accreditation," in the *International Journal of Quality and Reliability Management* (Vol. 19, No. 6, 2002), quoted by Dalgleish (2005), aimed to determine if ISO 9000 certification is the cause for the better performance. It examined the respective five-year before and after certification profitability and sales performances of 800 certified, non-certified, and being certified companies in Spain. The study confirms that certified companies perform better. The main finding, though, is that certified companies had the same performance after certification, concluding that ISO 9000 certification had no affect.

As mentioned in the article, "ISO quality standard provides corporations with substantial financial rewards" (2002), researchers from UCLA, the University of Maryland and the Universidad Carlos III in Madrid analyzed 7,598 publicly-traded firms listed in the New York Stock Exchange (NYSE). They found a direct correlation with a firm's return on assets (ROA). The certified firms improved their performance while the non-certified firms experienced substantial deterioration. They concluded that something changed specifically at the certified firms in the year prior to the actual certification. Given the magnitude of the improvements, it seems likely that other circumstances other than ISO 9000 contributed. However, the findings strongly suggest that the preparation also contributed to superior performance.

Another study by Pinar, et al. (2003) examined the monthly and avrage 48-month market returns of sixty-seven (67) certified and thirty seven (37) non-certified firms listed in the Istanbul Stock Exchange Market (ISE) over time periods of one-year, two-year, three-year, and four-year. The results of these different scenarios showed that for all time periods the certified firms had higher mean returns. The other interesting finding is that the certified firms have reduced stock returns volatility for all time periods, except one. It appeared that ISO 9000 certification also seems to reduce risk.

ISO 9000 in the Philippines

Based on Republic Act (RA) 4109 entitled "Philippine Standardization Law", the Bureau of Product Standards (BPS) of the Department of Trade and Industry (DTI), is the National Standards Body (NSB) of the Philippines. The BPS undertakes the development, promulgation and promotion of Philippine National Standards (PNS). It is involved in the development and application of national, regional and international standards, in partnership with various technical committees and working groups. As of 2002, there have been forty-seven (47) laboratories that have issued 1,444 ISO 9000 certifications.

One study by Marquez (1997) of thirty (30) Philippine manufacturing companies suggests that certification is beneficial. A survey on both financial and non-financial

indicators found out that 63% claimed to have increased sales. Thirty-three percent have reduced production costs, and 71% increased profits due to improved sales and/or reduced costs, and/or improved product type forecasting. On non-financial measures, 76% claimed to have increased productivity. Seventy percent have rendered faster service response time. Fifty-two percent claimed to have improved inventory turnover. Fifty-two percent claimed to have improved delivery times. Seventy-seven percent have established a formal quality-based system; seventy-three percent have established a consistent documentation method; and sixty-seven percent said that it led them to better understand their firms' processes and responsibilities.

V. SOME INITIAL OBSERVATIONS

Business organizations are in a faster-paced, globalized environment that requires great efficiency and effectiveness. If something goes wrong, the organization must promptly trace the source of the fault and address the situation. Changes in its systems and/or its operations must be done smoothly. Since ISO 9000 provides a venue to facilitate these instances, it will be much easier to actually adapt. It requires the organization to conform to some standard and to make certain commitments.

However, there are some instances wherein it did more harm than good. It does not delve deep into these standards and requirements. It does not ensure that these bases for conformance are even correct. This means that if these bases are flawed, then the effort to get certified is flawed. An organization can still produce poorly-made products or offer poor service and still get certified because it is consistent and conforming to a set of standards.

Some studies conducted using financial measures were using just one measure. Focusing on one measure entails the risk of the study being too limited. There is a chance that other financial measures would reveal trends contrary to one another. It fails to consider that various financial ratios are related to each other. The studies using non-financial measures derived their data from interviews of personnel representing the company. This runs the risk of having biased answers. This study shall make use of three financial measures based on published financial data to verify the results of one measure against the other two. It makes the analysis more stringent.

VI. CONCEPTUAL FRAMEWORK

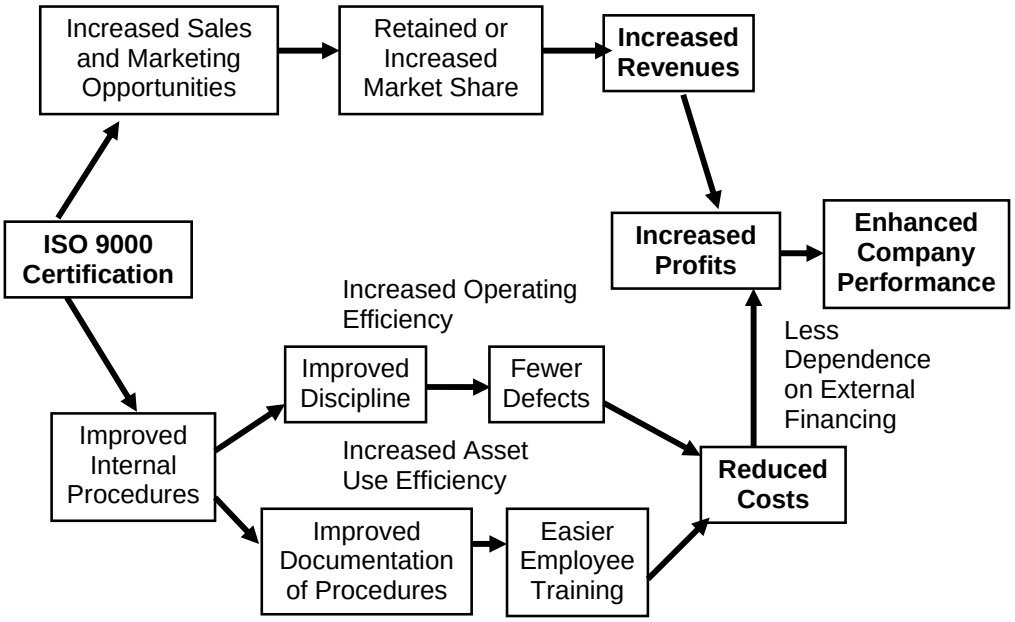
ISO 9000 certification can be seen as a critical first step towards implementing a TQM system. It presents the basic nature of work processes necessary to achieve the objectives of TQM (Talavera, 2000). TQM has an impact on both revenues and costs. Improved performance leads to improved reputation, resulting in improved market share and/or the ability to dictate prices without much consequence. Improved reliability or conformance to standards leads to increased productivity and efficiency and decreased scrap or rework costs and product liability costs, resulting to decreased manufacturing and service costs. These then should lead to higher profits (Garvin, 1984).

Often, companies become certified because suppliers and/or customers require it.

Suppliers want to do business with competitive firms. Customers want better products and/or services. ISO 9000 certification provides a way to address these requirements because it improves operating procedure and reduces cost. The certification has been proven to be a very powerful marketing tool. This "stamp of approval" lets customers know what to expect; thus, they get a quality product. As customers demand such standards and as more international companies come into the market, competition increases. This will result in improved quality and decreased cost, further contributing to better performance (Nurre, Gunaman, & De-Almeida, 2000).

ISO 9000 also leads to improvements in a firm's internal procedures, enhancing performance by reducing cost. It also imposes a significant degree of discipline on the firm. Defect rates should decrease and defects should be caught earlier, allowing them to be corrected at lower cost. It can identify obsolete or counterproductive practices. The procedures must be sufficiently well-defined to be documented. These thus become easier to transfer to new employees, decreasing dependency on tacit knowledge, and increasing productivity by improving employee morale. Thus, manufacturing costs should decrease, improving performance (Corbett et al., 2004). An integrated graphical illustration is shown below:

Figure 1
ISO 9000 Certification and Company Performance
Conceptual Framework



This framework indicates that there are three approaches that must be adopted to fully appreciate the link between ISO 9000 certification and enhanced company performance. However, the constraints governing this framework limit its perspective to the firm's internal mechanisms. This excludes external factors that can affect the organization.

VII. RESEARCH METHODOLOGY

A set of criteria was made for this study to ensure that only ISO 9000-certified firms are involved in this study:

1) The organization must be in the top 500 companies listed in Business World's Top 1,000 Corporations as of 2006 to 2007. Aside from relatively easy access to financial data, this also implies that the company is big enough to institutionalize a formal TQM system.
2) The organization must have enough financial data to enable a three-year before-and-after analysis will be considered for the study, specifically sales, net income, total assets, and total equity to satisfy the conceptual framework.
3) The certification must cover their entire organization and not just one or a few business operations, and/or departments, implying total company commitment.

Each company within the top 500 was screened given the said criteria. Initially, there were seventy-six (76) ISO 9000 certified companies found. However, issues such as lack of certification dates and insufficient financial data trimmed the list further. The profile of the resulting forty-nine (49) firms comprising the sample size is shown in Tables 1a and 1b:

Table 1a
Distribution of Sample Firms by Industry

Industry	No. of Firms	%
Construction	3	6%
Utilities	1	2%
Financial	4	8%
Manufacturing	36	73%
Real Estate	2	4%
Logistics & Communications	2	4%
Wholesale & Retail	1	2%
Total	49	100%

Table 1b
Distribution of Sample Firms by Year of Certification

Year	No. of Firms	%
2004	2	4%
2003	13	27%
2002	13	27%
2001	3	6%
2000	3	6%
1999	11	22%
1998	4	8%
Total	49	100%

The certified companies shall be analyzed using a three-year before and after outlook at its financial performance using the components of the DuPont Return on Equity (ROE). These are operating efficiency (measured by net income margin), asset use efficiency (asset turnover), and financial leverage (equity multiplier). By eventually achieving a high quality of performance via ISO 9000 accreditation, it is hypothesized that:

- The firm will reduce total selling, general, and administrative costs by significantly increasing operating efficiency.
- The firm will make better and more efficient use of its assets to generate higher sales per peso of asset by significantly increasing its asset use efficiency.
- The firm will have less dependence on external financing as it is able to generate more internal funding due to the increase in operating and asset use efficiency.

A t-test for paired sample of means will be used for the analysis of aggregate figures. Paired sample t-test is used in before-and-after studies, or when the samples are the matched pairs, which in both cases is what the data is all about. Using this test, with respect to the conceptual framework and the three hypotheses, can determine if certification significantly improved business performance or not. The details of the results will simply take note of which improved and which declined based on the changes in the means before and after certification, due to the fact that the data points per company is too small.

As a control variable, the behavior of the real Gross Domestic Product (GDP) growth covering the period of the study is introduced. GDP has long been an indicator in evaluating the country's business environment, as summarized in Table 2.

Table 2
Aggregate Average Real GDP Growth and Real GDP Growth Standard Deviation

	Before	After
Real GDP growth	3.34%	4.54%
Real GDP growth standard deviation	1.91	0.81

It is seen here that on the average, there is an improvement in real GDP growth and in its variability. This shows that the Philippine business environment in general has shown good performance, which is significantly improving and significantly stabilizing, over the period of the study. In other words, business organizations in general, with or without certification, should also experience an improvement in their performance and a more stable business environment.

VIII. PRESENTATION OF RESULTS

The aggregate results of the study's research and analysis are presented in Tables 3a and 3b.

Table 3a
Aggregate Average Changes

	Before	After	t – statistic
Net income margin	(1.29%)	1.92%	0.77
Asset turnover	0.10	(0.01)	(2.03)
Financial leverage	(0.21)	0.07	0.17

**α = 0.05, df = 48*

Table 3b
Average Changes in Standard Deviation

	Before	After
Net income margin	10.74%	10.74%
Asset turnover	0.42	0.32
Financial leverage	12.57	6.53

It is seen here that there is an improvement in the operating efficiency and in the dependence in external financing after certification on average, but not significantly. Their behaviors are consistent with GDP growth behavior and with the conceptual framework. On the other hand, asset use efficiency significantly declined after certification, which is inconsistent. It is also shown here that there are fewer fluctuations in asset turnover and leverage after certification. This is also consistent with the behavior of the control variable.

Also presented in Table 4 are the details of each financial ratio used in this study:

Table 4
Changes in Net Income Margin

Net Income Behavior	No. of Firms	%
Number of firms with improved net income margin	21	42.86%
Number of firms with reduced net income margin	28	57.14%

As seen in Table 4, twenty-one of the 49 companies sampled (43%) improved their operating efficiency after certification. Of these, 14 are manufacturing firms, two each from financial intermediation and real estate, and one each from construction, utilities, and retail trade. Of the twenty-one, two firms (one manufacturing and one real estate) improved their net income changes by more than 10%. Two manufacturing firms

improved by more than 50%. The other twenty-eight companies declined after certification. Of the twenty-eight, 22 are manufacturing firms, and two each come from construction, financial intermediation, and transportation. Of the twenty-eight, four manufacturing firms declined more than 10%. One manufacturing firm declined by more than 50%. This can mean that while they are generating sizeable revenues, they are selling products and/or services inefficiently, spending too much on operational costs.

Table 5
Changes in Asset Turnover

Asset Turnover Behavior	No. of Firms	%
Number of firms with improved asset turnover	19	38.78%
Number of firms with reduced asset turnover	30	61.22%

As shown in Table 5, only nineteen out of 49 companies (39%) sampled improved their asset use efficiency after certification. 12 of these are manufacturing firms, three are financial intermediation firms, and two each are from construction and real estate. Of the nineteen, eight (seven manufacturing and one financial intermediation) improved the changes in asset turnover by more than 10% while three manufacturing firms improved by more than 20%. One real estate firm improved by more than 30%. The other 30 companies declined. These are composed of 24 manufacturing firms, two from transportation, and one each from construction, financial intermediation, utilities, and retail trade. Of the thirty, eight manufacturing firms declined more than 10%. Five (four manufacturing and one construction) declined by more than 20% while four (three manufacturing and one financial intermediation) declined by more than 50%. It is noteworthy that these firms may not maximize or efficiently use their assets to operate. This one factor can also explain why there are firms that did not significantly improve their net income margins.

Table 6
Changes in Financial Leverage

Financial Leverage Behavior	No. of Firms	%
Number of firms with improved financial leverage	30	61.22%
Number of firms with reduced financial leverage	19	38.78%

As shown in Table 6, majority (30 of 49 or 61%) have improved financial leverage, thus reducing their dependence on external financing by improving their generation of internal funds. Those that improved include 21 manufacturing firms, three each of

financial intermediation and construction firms, and one each coming from real estate, transportation, and retail trade. Of the thirty, one construction firm improved by more than 10%. Nine (seven manufacturing, one construction, and one retail trade) improved by more than 20% while 17 (13 manufacturing, three financial intermediation, and one transportation) improved by more than 50%. The other nineteen that declined is composed of 15 manufacturing firms and one each from financial intermediation, utilities, real estate, transportation, and retail trade. Of the nineteen, two (one manufacturing and one utilities) declined by more than 10% while another two manufacturing firms declined by more than 20%. Eleven firms (ten manufacturing, one real estate, and one transportation) declined by more than 50%. One explanation is that since there are firms that are still selling and operating inefficiently, they cannot generate enough internal resources from their own income to continually finance the business, hence the dependence on external financing.

It was earlier noted that there has been reduced fluctuations in the said financial ratios after certification. The breakdown of the aggregate average standard deviation per financial ratio is presented in Table 7.

Table 7
Improvements in Standard Deviation

Standard Deviation Behavior	No. of Firms	%
Number of firms with lower net income margin standard deviation	28	57.14%
Number of firms with lower asset turnover standard deviation	28	57.14%
Number of firms with lower financial leverage standard deviation	30	61.22%

As shown in Table 7, majority have experienced a more consistent change in their operating efficiency (57%), asset use efficiency (57%), and dependence on external financing (61%) after certification. However, twenty-one firms each for net income margin and asset turnover and 19 for leverage experienced greater fluctuations. This may mean that the discipline supposedly imposed, and all of its affects afterwards, are not being actually realized within the firm.

Since the certification involves mostly manufacturing firms, a closer look at this industry group is taken into consideration. Shown in Tables 8a and 8b are the results of the analysis.

Table 8a
Average Changes in Manufacturing Firms

	Before	After	t– statistic
Net income margin	(1.42%)	3.03%	0.78
Asset turnover	0.12	(0.00)	(1.86)
Leverage	(0.00)	0.14	0.06

**α = 0.05, df = 35*

Table 8b
Average Changes in Standard Deviation in Manufacturing Firms

	Before	After
Net Income Margin	12.75%	12.95%
Asset Turnover	0.37	0.45
Leverage	16.50	7.78

Some manufacturing firms improved their operating efficiency and leverage after certification, but not significantly. Their asset turnover, however, declined significantly. Also, as described earlier, most of the firms that declined in performances came from the manufacturing industry. It is also seen that their operating efficiency and asset use efficiency experienced greater fluctuations after certification. From this, it can be observed that although manufacturing firms are improving their operating performance, they may not be maximizing or efficiently using their assets to do so.

Given the scope and the results thus far, it can be seen that the effects of ISO 9000 certification are mostly felt in the dependence of firms on external financing. While there have been a good number of firms showing improvements across all three criteria, there is not enough to say that these are significant. It is also noteworthy that there are actually more firms in the sample that experienced worse conditions after certification.

What is only conclusive thus far in the study is that majority of ISO 9000 certified firms experience less fluctuation in these financial ratios after certification. Furthermore, most of the firms sampled almost satisfied the conditions of the study, with most firms improving their leverage ratio. It is interesting to see that the financial ratios that are perceived to supposedly have more direct impact due to certification – operating efficiency and asset use efficiency because of its association with TQM – have less significance in this study. What can be further argued here is that the lesser improvements in operating and asset use efficiencies may have contributed to the bigger improvements in leverage.

What is more interesting here is that there are also a good number of firms whose performances actually declined, some significantly, after certification. The most prominent example here is the significant decline in the asset use efficiency of manufacturing firms. This is also in complete contrast to some of the previous researches that found similar firms improving their asset use. This is prominent because most of the certified firms come from the manufacturing sector. In terms of the conceptual framework developed earlier and based on the results of the study, it is also observed that Philippine firms satisfy only a part of the framework. The conceptual framework calls for three routes to take in order to fully enhance company performance after certification. Most companies only took one route. A few took two routes. It seems that these are the firms that are simply satisfying the minimum requirements rather than doing it wholeheartedly.

IX. CONCLUSION

The results of the study showed that there are only a few who significantly improved operating efficiency, asset use efficiency, and/or dependence on external financing. In other words, majority of the sample size did not meet the characteristics this study is

looking for. The literature all suggested that certified American and European firms experienced improvement in their financial performance, in market returns, stock prices, and/or return on assets. Unless the source data itself is flawed, this idea does not hold true for the Philippine business environment. At this point, it can only be speculated that ISO 9000 certification – or even quality management in general – is not fully understood and fully appreciated in the Philippines. Even the database from the BPS is incomplete (e.g. the dates of certifications are sometimes missing). The BPS is supposed to be at the forefront in promoting these standards in the country. It can be also further speculated that there are problems in the implementation of whatever recommended activities done in the preparation for certification. As mentioned, much of the criticism is based on its implementation. Some firms opt to take the certification wholeheartedly while others just simply comply with the minimum requirements. Also, the GDP growth indicators indicated that the general business environment had improved over the past years covered by the study. Thus, with or without certification, companies should have some degree of improvement as well. The fact is that some while GDP growth is improving, some firms are going in the opposite direction. Another explanation to this may be that the strategies and business tactics, as well as business culture and politics, might also prove to be hindrances rather than reinforcements to whatever TQM initiative is already in place. Lack of management commitment, inability to change organizational culture, implementation problems, and poor use of data can prove to be the mistakes and barriers that hinder its appreciation (Chen, Chen, Wu & Lin, 2005). In fact, when some firms were asked to verify some details regarding their certification, they were unable to give any straight and/or concrete answer.

Another problem may be the idea that the link between quality and profitability does not consider external environmental factors. It says something about the lack of a holistic approach and perspective when it comes not only to ISO 9000 certification, but to TQM. In the conceptual framework, there is no mention of the possible external factors that affect the business environment. The quality framework for European firms focuses on enablers to achieve results. These enablers include leadership, people management, policy and strategy, resources, and processes. These influence people satisfaction, customer satisfaction, impact on society, and business results. The framework for American firms also has a similar perspective. Leadership influences strategic planning and customer and market focus. These influence the human resources focus and process management, yielding business results. The degree of information and analysis monitors the organizational performance (Chase et al. 2001). These frameworks also ignore possible external factors. This could be another reason why not all certified companies improved as expected.

Quality management experts ought to take a second look into the true value of all of these standards and certifications that they are recommending companies to adopt. They ought to see if such practices, and more importantly the implementation of these practices, really improve performance. ISO 9000 certification lays out the requirements for a TQM program. Its use should not be limited as a marketing tool or a means to an end, but more of an initiative to genuinely start improving operations. It should not also be implemented partially (i.e. focusing only on cost reduction or only on revenue enhancement). It should be implemented completely. The ISO itself may also consider revising, or even upgrading, its minimum requirements to compel companies to more closely adhere to its quality management policies and practices. Researchers and academics also ought to take a second look at

the impact of quality management practices, especially on different cultures and different business environments. As seen, the effects of certification are not consistent across borders, let alone across industries operating within one's borders. All of these concluding speculations and observations are subject to further research. Case studies into the sampled firms may be able to determine the instances as to why one firm improved and another did not. Also, it must be considered that the research is limited to the top 500 companies in the Philippines. There is the possibility that smaller firms outside this scope with relatively larger opportunities for growth and expansion may yield different results. Also, since the data used in this study covers only short-term performance, potential long-term improvements may also be explored. Another way to give more depth to the study is to approach it industry by industry to determine where ISO 9000 certification has the most and least impact.

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Appendix A
Real GDP Growth Mean and Standard Deviations*

Period Covered	Before		After		Difference of Means	Mean Improved?
	Mean	SD	Mean	SD		
GDP 2001 to 2006 (ISO acquired in 2003)	3.97	0.85	5.50	0.66	1.53	YES
GDP 2000 to 2005 (ISO acquired in 2002)	3.90	0.78	5.23	0.85	1.33	YES
GDP 1999 to 2004 (ISO acquired in 2001)	3.60	0.72	5.03	1.02	1.43	YES
GDP 1998 to 2003 (ISO acquired in 2000)	2.41	2.63	3.97	0.85	1.56	YES
GDP 1997 to 2002 (ISO acquired in 1999)	2.67	2.95	3.90	0.78	1.23	YES
GDP 1996 to 2001 (ISO acquired in 1998)	3.49	3.54	3.60	0.72	0.11	YES

*source of data: http://www.pids.gov.ph

Appendix B
Changes in Net Income

Company	Industry**	Before		After		Difference of Means	Mean Improved?
		Mean	**SD**	**Mean**	**SD**		
ISO 9000 Acquired in 2004		**2002 to 2004**	**2002 to 2004**	**2005 to 2007**	**2005 to 2007**		
Bank of the Philippine Islands	FIN	4.39%	3.77%	-0.31%	7.72%	-4.70%	NO
Capitol Steel Corp.	MAN	0.25%	0.89%	-0.24%	2.46%	-0.49%	NO
ISO 9000 Acquired in 2003		**2001 to 2003**	**2001 to 2003**	**2004 to 2006**	**2004 to 2006**		
Union Galvasteel Corp.	MAN	8.37%	13.40%	0.18%	7.54%	-8.19%	NO
Pag-asa Steel Works, Inc.	MAN	2.36%	3.06%	-0.22%	0.29%	-2.58%	NO
Nidec Philippines Corp.	MAN	-3.70%	3.07%	1.51%	3.26%	5.21%	YES
Clarion Manufacturing Corp. of the Philippines	MAN	0.30%	1.20%	-0.86%	0.37%	-1.16%	NO
Asahi Glass Philippines, Inc.	MAN	0.25%	48.16%	2.17%	9.45%	1.91%	YES
Cathay Pacific Steel Corp.	MAN	0.05%	0.15%	0.33%	0.27%	0.28%	YES
Mitsuba Philippines Corp.	MAN	-3.57%	1.13%	-4.36%	1.39%	-0.79%	NO
Pilipinas Kao, Inc,	MAN	2.29%	4.99%	0.32%	1.95%	-1.96%	NO
Sanyo Semiconductor Manufacturing Phils. Corp.	MAN	-1.14%	2.57%	1.05%	3.08%	2.19%	YES
First Sumiden Circuits, Inc.	MAN	1.39%	3.16%	-1.02%	3.86%	-2.41%	NO
APO Cement Corp.	MAN	3.12%	35.45%	-4.28%	11.84%	-7.41%	NO
Makati Development Corp.	CON	-2.51%	2.96%	0.54%	0.86%	3.05%	YES
SIIX Logistics Philippines	MAN	0.47%	0.72%	0.27%	0.69%	-0.20%	NO
ISO 9000 Acquired in 2002		**2000 to 2002**	**2000 to 2002**	**2003 to 2005**	**2003 to 2005**		
Phelps Dodge Philippines Energy Products Corp.	MAN	3.39%	3.02%	-0.25%	1.23%	-3.65%	NO
Megaworld Corp.	REAL	-7.59%	3.40%	5.67%	1.02%	13.26%	YES
Dole Philippines, Inc.	MAN	-2.40%	7.49%	-1.51%	8.35%	0.89%	YES
Northern Cement Corp.	MAN	5.88%	17.79%	-3.17%	35.39%	-9.05%	NO
United Coconut Planters Life Assurance Corp.	FIN	-4.81%	1.79%	-2.33%	1.41%	2.48%	YES
Fortune Cement Corp.	MAN	-50.35%	39.54%	67.35%	102.05%	117.70%	YES
Bauang Private Power Corp.	UTIL	-4.05%	12.61%	3.25%	1.24%	7.30%	YES
Kraft Foods (Philippines), Inc.	MAN	2.33%	1.86%	-0.65%	2.72%	-2.98%	NO
Solid Cement Corp.	MAN	-4.31%	8.86%	10.88%	13.56%	-15.18%	NO
FR Cement Corp.	MAN	16.24%	16.57%	7.51%	28.06%	8.73%	YES
JGC Philippines, Inc.	REAL	3.67%	9.19%	0.73%	1.54%	2.95%	YES
Republic Cement Corp.	MAN	77.04%	136.05%	-73.25%	76.82%	150.29%	YES
Metro Drug, Inc.	RET	0.21%	0.53%	0.39%	0.69%	0.18%	YES
ISO 9000 Acquired in 2001		**1999 to 2001**	**1999 to 2001**	**2002 to 2004**	**2002 to 2004**		
Philippine Resins Industries, Inc.	MAN	-13.29%	14.67%	2.80%	4.46%	16.09%	YES
Cebu Mitsumi, Inc.	MAN	-29.71%	52.91%	27.57%	53.14%	-57.28%	NO
Wyeth Philippines, Inc.	MAN	-0.82%	2.12%	-0.35%	3.17%	-0.47%	NO

Company	Industry**	Before		After		Difference of Means	Mean Improved?
ISO 9000 Acquired in 2000		**1998 to 2000**	**1998 to 2000**	**2001 to 2003**	**2001 to 2003**	0.00%	NO
Splash Corp.	MAN	0.22%	0.40%	2.11%	1.90%	1.89%	YES
EEI Corp.	CON	-10.21%	10.71%	0.79%	23.01%	-11.00%	NO
Medicard Philippines, Inc.	FIN	0.47%	1.54%	-0.20%	0.32%	0.67%	YES
ISO 9000 Acquired in 1999		**1997 to 1999**	**1997 to 1999**	**2000 to 2002**	**2000 to 2002**		
D.M. Consunji, Inc.	CON	-9.90%	12.31%	-2.56%	4.37%	-7.33%	NO
Toshiba Information Equipment (Philippines), Inc.	MAN	0.30%	1.07%	1.48%	3.77%	-1.18%	NO
Pricon Micro-Electronics, Inc.	MAN	-0.29%	2.15%	6.29%	6.95%	-6.57%	NO
Asian Transmission Corp.	MAN	-3.71%	16.74%	0.44%	0.25%	4.15%	YES
Scad Services Pte. Ltd.	MAN	-0.52%	2.87%	2.60%	3.26%	-3.12%	NO
Wu Kong Singapore Pte. Ltd.	MAN	5.49%	9.56%	-8.34%	5.40%	-13.83%	NO
Rohm Electronics Philippines, Inc.	MAN	-1.68%	7.31%	0.04%	4.88%	1.72%	YES
P. Imes Corp.	MAN	1.89%	4.81%	-1.48%	12.07%	3.36%	YES
Rohm Mechatech Philippines, Inc.	MAN	-7.61%	16.33%	7.25%	8.46%	-14.86%	NO
Cebu Air, Inc.	TRAN	1.23%	4.26%	-0.07%	1.82%	-1.30%	NO
Sulpicio Lines, Inc.	TRAN	-0.22%	3.07%	-3.30%	3.61%	-3.08%	NO
ISO 9000 Acquired in 1998		**1996 to 1998**	**1996 to 1998**	**1999 to 2001**	**1999 to 2001**		
Philippine Sinter Corp.	MAN	3.13%	2.54%	3.88%	6.07%	-0.74%	NO
Mitsumi Philippines, Inc.	MAN	-0.17%	5.93%	2.15%	3.82%	-2.32%	NO
Philam Plans, Inc.	FIN	-2.91%	7.92%	2.48%	5.74%	-5.39%	NO
Honda Cars Philippines, Inc.	MAN	-1.96%	3.42%	0.10%	0.86%	2.04%	YES

Appendix C
Changes in Asset Turnover

Company	Industry**	Before		After		Difference of Means	Mean Improved?
		Mean	**SD**	**Mean**	**SD**		
ISO 9000 Acquired in 2004		**2002 to 2004**	**2002 to 2004**	**2005 to 2007**	**2005 to 2007**		
Bank of the Philippine Islands	FIN	-0.01	0.01	0.00	0.01	0.01	YES
Capitol Steel Corp.	MAN	0.44	0.34	-0.08	0.57	-0.53	NO
ISO 9000 Acquired in 2003		**2001 to 2003**	**2001 to 2003**	**2004 to 2006**	**2004 to 2006**		
Union Galvasteel Corp.	MAN	0.10	0.14	0.06	0.07	-0.04	NO
Pag-asa Steel Works, Inc.	MAN	0.00	0.31	0.19	0.24	0.19	YES
Nidec Philippines Corp.	MAN	-0.12	0.08	-0.23	0.54	-0.11	NO
Clarion Manufacturing Corp. of the Philippines	MAN	-0.12	0.94	0.03	1.20	0.15	YES
Asahi Glass Philippines, Inc.	MAN	0.17	0.13	-0.11	0.06	-0.27	NO
Cathay Pacific Steel Corp.	MAN	0.13	0.15	0.05	0.06	-0.08	NO
Mitsuba Philippines Corp.	MAN	0.07	0.14	0.19	0.24	0.12	YES
Pilipinas Kao, Inc,	MAN	-0.18	0.31	-0.27	0.29	-0.09	NO
Sanyo Semiconductor Manufacturing Phils. Corp.	MAN	0.29	0.47	0.15	0.28	-0.14	NO
First Sumiden Circuits, Inc.	MAN	0.12	0.22	0.02	0.20	-0.10	NO
APO Cement Corp.	MAN	0.02	0.03	0.07	0.06	0.05	YES
Makati Development Corp.	CON	0.18	0.38	-0.06	0.27	-0.23	NO
SIIX Logistics Philippines	MAN	0.93	2.36	-0.44	0.60	-1.37	NO
ISO 9000 Acquired in 2002		**2000 to 2002**	**2000 to 2002**	**2003 to 2005**	**2003 to 2005**		
Phelps Dodge Philippines Energy Products Corp.	MAN	0.06	0.13	0.24	0.10	0.19	YES
Megaworld Corp.	REAL	0.00	0.01	0.00	0.01	0.01	YES
Dole Philippines, Inc.	MAN	0.11	0.23	-0.08	0.10	-0.18	NO
Northern Cement Corp.	MAN	0.08	0.01	0.01	0.15	-0.07	NO
United Coconut Planters Life Assurance Corp.	FIN	-0.16	0.33	0.02	0.01	0.19	YES
Fortune Cement Corp.	MAN	0.12	0.12	-0.01	0.06	-0.13	NO
Bauang Private Power Corp.	UTIL	0.06	0.04	0.01	0.10	-0.05	NO
Kraft Foods (Philippines), Inc.	MAN	0.07	0.09	0.33	0.34	0.26	YES
Solid Cement Corp.	MAN	0.05	0.14	0.08	0.46	0.03	YES
FR Cement Corp.	MAN	0.06	0.08	0.04	0.08	-0.02	NO
JGC Philippines, Inc.	REAL	-0.22	0.72	0.13	0.41	0.35	YES
Republic Cement Corp.	MAN	0.01	0.11	-0.03	0.04	-0.04	NO
Metro Drug, Inc.	RET	0.13	0.21	0.05	0.28	-0.07	NO
ISO 9000 Acquired in 2001		**1999 to 2001**	**1999 to 2001**	**2002 to 2004**	**2002 to 2004**		
Philippine Resins Industries, Inc.	MAN	0.35	0.29	0.11	0.09	-0.24	NO
Cebu Mitsumi, Inc.	MAN	0.07	0.02	0.20	0.34	0.13	YES
Wyeth Philippines, Inc.	MAN	0.05	0.46	-0.10	0.29	-0.14	NO

Company	Industry**	Before		After		Difference of Means	Mean Improved?
		Mean	**SD**	**Mean**	**SD**		
ISO 9000 Acquired in 2000		**1998 to 2000**	**1998 to 2000**	**2001 to 2003**	**2001 to 2003**		
Splash Corp.	MAN	0.04	0.20	0.03	0.20	-0.01	NO
EEI Corp.	CON	-0.03	0.24	-0.03	0.11	0.00	YES
Medicard Philippines, Inc.	FIN	0.62	0.17	-0.50	0.94	-1.12	NO
ISO 9000 Acquired in 1999		**1997 to 1999**	**1997 to 1999**	**2000 to 2002**	**2000 to 2002**		
D.M. Consunji, Inc.	CON	-0.15	0.19	-0.12	0.11	0.03	YES
Toshiba Information Equipment (Philippines), Inc.	MAN	0.64	2.52	0.43	0.38	-0.21	NO
Pricon Micro-Electronics, Inc.	MAN	0.47	0.16	0.03	0.45	-0.43	NO
Asian Transmission Corp.	MAN	-0.07	0.38	0.21	0.09	0.27	YES
Scad Services Pte. Ltd.	MAN	0.39	0.34	0.20	0.32	-0.19	NO
Wu Kong Singapore Pte. Ltd.	MAN	-0.29	0.86	-0.03	0.76	0.26	YES
Rohm Electronics Philippines, Inc.	MAN	0.19	0.08	0.00	0.40	-0.19	NO
P. Imes Corp.	MAN	-0.09	0.36	0.06	1.19	0.15	YES
Rohm Mechatech Philippines, Inc.	MAN	0.02	0.84	-0.06	0.18	-0.08	NO
Cebu Air, Inc.	TRAN	0.10	1.42	0.07	0.31	-0.03	NO
Sulpicio Lines, Inc.	TRAN	-0.03	0.03	-0.10	0.39	-0.07	NO
ISO 9000 Acquired in 1998		**1996 to 1998**	**1996 to 1998**	**1999 to 2001**	**1999 to 2001**		
Philippine Sinter Corp.	MAN	-0.01	0.11	-0.02	0.16	-0.01	NO
Mitsumi Philippines, Inc.	MAN	-0.41	2.09	-0.25	0.26	0.16	YES
Philam Plans, Inc.	FIN	-0.01	0.01	0.01	0.03	0.02	YES
Honda Cars Philippines, Inc.	MAN	0.73	1.78	-1.02	1.61	-1.75	NO

Appendix D
Changes in Financial Leverage

Company	Industry**	Before		After		Difference in Means	Mean Improved?
		Mean	SD	Mean	SD		
ISO 9000 Acquired in 2004		**2002 to 2004**	**2002 to 2004**	**2005 to 2007**	**2005 to 2007**		
Bank of the Philippine Islands	FIN	0.20	0.54	0.79	18.38	0.59	YES
Capitol Steel Corp.	MAN	-0.16	0.59	0.42	1.06	0.57	YES
ISO 9000 Acquired in 2003		**2001 to 2003**	**2001 to 2003**	**2004 to 2006**	**2004 to 2006**		
Union Galvasteel Corp.	MAN	-1.16	2.10	0.13	0.15	1.28	YES
Pag-asa Steel Works, Inc.	MAN	-6.20	11.13	-0.03	0.40	6.17	YES
Nidec Philippines Corp.	MAN	0.19	0.58	-0.55	0.98	-0.74	NO
Clarion Manufacturing Corp. of the Philippines	MAN	-0.35	0.33	0.00	0.07	0.35	YES
Asahi Glass Philippines, Inc.	MAN	-0.34	0.93	0.24	0.32	0.57	YES
Cathay Pacific Steel Corp.	MAN	0.69	0.93	0.47	2.09	-0.22	NO
Mitsuba Philippines Corp.	MAN	0.07	0.03	0.52	0.38	0.45	YES
Pilipinas Kao, Inc,	MAN	-0.19	0.18	0.14	0.32	0.33	YES
Sanyo Semiconductor Manufacturing Phils. Corp.	MAN	-11.38	23.45	-0.33	0.45	11.06	YES
First Sumiden Circuits, Inc.	MAN	-0.97	0.72	0.07	0.85	1.04	YES
APO Cement Corp.	MAN	-0.04	0.09	-0.08	0.07	-0.04	NO
Makati Development Corp.	CON	-0.19	0.48	-0.02	0.55	0.16	YES
SIIX Logistics Philippines	MAN	-2.47	5.92	0.15	0.61	2.61	YES
ISO 9000 Acquired in 2002		**2000 to 2002**	**2000 to 2002**	**2003 to 2005**	**2003 to 2005**		
Phelps Dodge Philippines Energy Products Corp.	MAN	3.48	22.54	-1.89	1.10	-5.37	NO
Megaworld Corp.	REAL	0.03	0.06	0.10	0.10	0.07	YES
Dole Philippines, Inc.	MAN	1.19	0.79	3.59	4.03	2.41	YES
Northern Cement Corp.	MAN	0.15	0.15	0.41	0.54	0.26	YES
United Coconut Planters Life Assurance Corp.	FIN	-1.28	3.12	0.21	0.38	1.49	YES
Fortune Cement Corp.	MAN	-4.88	7.40	4.13	7.19	9.01	YES
Bauang Private Power Corp.	UTIL	-0.22	0.76	-0.33	0.21	-0.12	NO
Kraft Foods (Philippines), Inc.	MAN	0.04	0.38	0.02	0.34	-0.03	NO
Solid Cement Corp.	MAN	0.34	2.96	-0.69	1.50	-1.03	NO
FR Cement Corp.	MAN	-13.07	26.28	12.87	22.88	25.94	YES
JGC Philippines, Inc.	REAL	0.47	0.38	-0.40	0.48	-0.86	NO
Republic Cement Corp.	MAN	0.94	1.19	-0.81	0.96	-1.75	NO
Metro Drug, Inc.	RET	-0.28	0.54	0.20	3.85	0.48	YES

Company	Industry**	Before		After		Difference in Means	Mean Improved?
		Mean	SD	Mean	SD		
ISO 9000 Acquired in 2001		**1999 to 2001**	**1999 to 2001**	**2002 to 2004**	**2002 to 2004**		
Philippine Resins Industries, Inc.	MAN	0.00	0.23	0.01	0.14	0.02	YES
Cebu Mitsumi, Inc.	MAN	-0.04	0.09	-0.04	0.08	0.00	YES
Wyeth Philippines, Inc.	MAN	0.07	0.71	0.28	0.69	0.20	YES
ISO 9000 Acquired in 2000		**1998 to 2000**	**1998 to 2000**	**2001 to 2003**	**2001 to 2003**		
Splash Corp.	MAN	-28.67	48.77	-2.29	3.70	26.39	YES
EEI Corp.	CON	-0.13	0.24	0.30	0.62	0.44	YES
Medicard Philippines, Inc.	FIN	0.21	1.78	0.18	1.40	-0.03	NO
ISO 9000 Acquired in 1999		**1997 to 1999**	**1997 to 1999**	**2000 to 2002**	**2000 to 2002**		
D.M. Consunji, Inc.	CON	-0.21	0.22	0.02	0.05	0.23	YES
Toshiba Information Equipment (Philippines), Inc.	MAN	0.70	6.91	0.13	1.06	-0.57	NO
Pricon Micro-Electronics, Inc.	MAN	0.59	0.64	-0.16	0.91	-0.76	NO
Asian Transmission Corp.	MAN	0.96	1.05	-0.52	0.67	-1.48	NO
Scad Services Pte. Ltd.	MAN	38.41	177.90	-3.71	4.98	-42.12	NO
Wu Kong Singapore Pte. Ltd.	MAN	33.70	230.18	-15.96	28.62	-49.66	NO
Rohm Electronics Philippines, Inc.	MAN	0.00	0.28	-0.03	0.30	-0.03	NO
P. Imes Corp.	MAN	-10.82	16.47	8.64	191.76	19.46	YES
Rohm Mechatech Philippines, Inc.	MAN	-0.45	0.74	-0.03	0.08	0.43	YES
Cebu Air, Inc.	TRAN	-5.02	9.73	1.65	4.57	6.67	YES
Sulpicio Lines, Inc.	TRAN	0.48	0.77	-2.74	4.89	-3.22	NO
ISO 9000 Acquired in 1998		**1996 to 1998**	**1996 to 1998**	**1999 to 2001**	**1999 to 2001**		
Philippine Sinter Corp.	MAN	0.08	0.24	-0.18	0.12	-0.26	NO
Mitsumi Philippines, Inc.	MAN	0.01	0.36	-0.12	0.27	-0.13	NO
Philam Plans, Inc.	FIN	-4.23	3.32	-1.75	4.20	2.48	YES
Honda Cars Philippines, Inc.	MAN	-0.52	0.72	0.26	0.59	0.78	YES

**Industry: FIN = Financial Intermediation; MAN = Manufacturing; CON = Construction; REAL = Real Estate and Renting Business; UTIL = Utilities (Electricity, Water, etc.); RET = Retail and Wholesale Trade; TRANS = Transportation and Logistics