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Sustainability Development Plan Of ICT Companies Of The Next Wave Cities In Calabarzon

Talag, Airene Rixelle Jackielou C.

Batangas State University
aixeloucastillotalag@gmail.com

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Abstract: In 2019, to become a digital-native enterprise is a campaign for Philippine ICT companies with a dream of building technology and data on an enhanced digital business platform. Information Communications Technology (ICT) influences today's way of life. The study intended to find out their company degree of sustainability and what improved efforts can be opted to eventually get certified or to avoid cancellation of certification so gathered feedback from company managers of ICT Companies in the 7 selected cities in CALABARZON Region. The study targeted 70 registered ICT companies as respondents with varying sizes and a few has been certified but the rest have not been. The descriptive correlational method of research was used utilizing an adaptive survey questionnaire. Percentage, mean and pearson's r were used as statistical treatment. The hypotheses testing revealed that the quality management practices had no significant effect on sustainability performance of ICT companies. Likewise, the firm size and certification status had no mediating effect on the relationship of extent of quality management to level of sustainability. Also, the results of the study further revealed that majority of the ICT companies were large with 200 and above employees and 41 were Non-ISO certified. When it comes to quality management practices; customer focus, leadership, engagement of people, process approach, and improvement were assessed to a great extent while evidence-based decision making, and relationship management were assessed to a moderate extent. Meanwhile, respondents were assessed to having a very high level of social sustainability, economic sustainability, and environmental sustainability. On the basis of the findings, sustainability development plan was proposed so that ICT companies can be way ahead and more prepared compared with other industries. This will also serve as reference on how ICT companies can survive and how their projects can be sustained in the long run.

Keywords: ICT, quality management practices, sustainability performance, firm size, certification status

1. INTRODUCTION

The emergence of technology and mobile access has brought forth improvement and modernization in the lives of people in both rural and urban contexts. This trend is expected to continue which suggests that as its availability widens, cost and affordability suit society. The widespread connection and penetration of mobile telephones and broadband internet pave the way for new options, products and services which in turn provide chances for agriculture, health, finance, education and further open gates for international trade. Communication channels were opened for peoples and countries through mobile phone and the web. ICT influences today's way of life. This is manifested in the way businesses are run in the local, district and national levels.

Occupation, economies as well as personal lives are becoming more digital, more connected and more automated. In the report of Cyberstates, it was stated that United States of America gets the bulk of US tech sector in terms of gross domestic product. It is far more than that of other industries such as retail, transportation and construction.

In total, it is clear that ICT has delivered significant economic and social progress. But more needs to be done, as its benefits are unevenly distributed and cannot always be fully enforced, to foster sustainable development and drive it forward.

Under the new normal scenario, the National Economic Development Authority identified the cluster industries that need to be prioritized in terms of provisions that would mobilize these sectors in order to help the government in its recovery program. These industries are clustered into agriculture and fishing and industry which include manufacturing companies, ICT companies, construction and electricity and power and the small and medium enterprises. For services cluster, retail and e-commerce transport, tourism, and financial services are included. Other industries are health and nutrition, education, housing and urban development.

In 2015, four out of the declared ten next wave cities are in Calabarzon namely: Dasmarinas City, Lipa City, Santa Rosa City and Taytay City. Next wave cities are top locations for local and international information technology and business process management (IT-BPM) players identified by the Department of Information and Communications Technology (DICT), Information Technology and Business Process Association of the Philippines (IT- BPAP). These cities including the other three cities in the whole Batangas Province not mentioned above namely: Batangas City, Santo Tomas City, and Tanauan City have more than 100 ICT companies with varying firm sizes. A few has been certified but the rest have not been even if they have been established and existing for years. While these cities are being eyed as the next wave cities, this study looked into the quality management practices and sustainability performance of ICT companies of the seven cities namely Dasmarinas City, Santa Rosa City, Taytay City, Lipa City, Batangas City, Santo Tomas City, and Tanauan City of the Calabarzon Region in order to find out their degree of sustainability, what improved efforts can be opted to eventually get certified. And from the result, the researcher proposed an appropriate sustainability development plan for ICT industry.

2. OBJECTIVES

This study aims to determine the mediating role of firm size and company certification on the relationship between quality management practices and sustainability performance particularly among ICT companies in the CALABARZON

Region. Specifically, this sought answers to the following questions:

1. What is the profile of company in terms of:
1.1. firm size; and
1.2. certification status?
2. To what extent do ICT companies practice the following:
2.1. customer focus;
2.2. leadership;
2.3. engagement of people;
2.4. process approach;
2.5. improvement;
2.6. evidence-based decision making; and
2.7. relationship management?
3. How do the respondents assess the level of sustainability in terms of the following:
3.1 social sustainability;
3.2 economic sustainability; and
3.3 environmental sustainability?

4. Do quality management practices have a significant effect on sustainability performance of ICT companies?

5. Do firm size and company certification status have mediating effect on the relationship between quality management practices and sustainability performance?

6. Based on the findings, what sustainability development plan in ICT industry may be proposed?

3. MATERIALS AND METHODS

This study was designed to assess the mediating effect of firm size and company certification on the relationship between quality management practices and sustainability performance among ICT companies in Batangas Province and selected cities in Calabarzon. The researcher used the descriptive correlational method of research.

Per trace activity made by the researcher online, there were wide-ranging ICT companies in the CALABARZON Region. However, updated lists of registered business establishments in some cities were not available electronically. So the researcher sent a letter of request to concerned local and national offices and even connected with friends working in City Halls of Batangas, Lipa, Santo Tomas, Tanauan, Santa Rosa, Dasmarinas and Taytay. She finally got the following data:

Table 1. Number of Respondents Per City

Name of City	Total Number of Registered ICT Company
Batangas City	9
Lipa City	14
Santo Tomas City	6
Tanauan City	0
Santa Rosa City	11
Dasmarinas City	33
Taytay City	11
Total	84

The respondents of this study were company managers of ICT companies who function and knowledgeable about the quality management practices and sustainability performance of their company.

The researcher used the probability sampling design since the number of the respondents were considered. Through this sampling, from 84 total number of ICT companies in the 7 cities, 70 or 83.33% were retrieved as respondents.

This study utilized the adaptive survey questionnaire as the main instrument in obtaining information. To reinforce and strengthen the gathered information, the researcher referred to books, journals, business pamphlets and magazines and surf the internet. The first part was the profile of the company as to the firm size and certification status. For quality management practices, some questions were adopted from the study of Shiroya (2012) entitled, Study of TQM Practices and Performances in Selected ISO Certified Manufacturing Facilities in Gujarat. For sustainability performance, some questions were adopted from the study of (Popescu & Popescu, 2019) entitled An Exploratory Study Based on a Questionnaire Concerning Green and Sustainable Finance, Corporate Social Responsibility, and Performance: Evidence from the Romanian Business Environment.

The draft questionnaire was presented to the adviser and panel members for checking, comments and suggestions. When comments and suggestions have been incorporated, the researcher asked for a schedule when she could present it to industry expert and statistician for validation as well as get advice with regard to administration and scoring to be used in the assessment of the respondents. When done, she requested a dry run testing or piloting of questionnaire to 30 managers of ICT companies in the National Capital Region (NCR). The said 30 managers answered the survey through the use of Google form, and got an overall Cronbach's Alpha of 0.985 for Quality Management Principles and 0.946 for Sustainability Pillars which are both interpreted as excellent. Only after making sure that the questionnaire was valid and reliable actual survey had occurred.

The researcher then sent a letter together with the google form of her survey questionnaire to the respondents. On the first attempt of the researcher, when it was at the peak of the Co-vid pandemic, 51.43% or 36 ICT companies managed to answer. However, a significant percentage from the list were closed and declined to participate due to many other reasons and thus made the researcher disallowed to proceed because of statistical explanations. Months passed, some businesses were able to adjust with the new normal guidelines and mandates therefore became responsive and in normal business operations. The researcher decided to reach back to those companies that were not operating and those who pledged to answer her survey questionnaire. 48.57% or 34 ICT companies were added to 51.43% who answered previously and with this number of retrieved responses the study was permitted to carry on.

4. RESULTS AND DISCUSSIONS

4.1 Profile of company

4.1.1firm size

Large businesses can benefit from economies of scale, and productivity ought to rise as businesses get bigger. Furthermore, it has been shown that new, mostly small businesses frequently encourage changes in incumbents that increase productivity while also introducing new technologies. Because of a concept known as economies of scale, which can be found in the traditional view of the company, firm size is a major factor in determining company profitability. Large corporations can produce goods at a much lower cost. The following table presents the distribution of company respondents of ICT companies in the CALABARZON Region in terms of firm size.

Table 4. Distribution of Company Respondents in terms of Firm Size

Firm Size	Frequency	Percentage
with 1 - 99 employees (small)	31	44.3
with 100 - 199 employees (medium)	4	5.7
with 200 and above employees (large)	35	50.0
Total	70	100.0

Table 4 shows the profile of company respondents in terms of firm size. Four (4) or five point seven (5.7%) falls on the bracket of 100 – 199 employees or medium firm size. There are thirty-one (31) or forty-four point three percent (44.3%) company respondents with 1 – 99 number of employees (small). Thirty-five (35) or fifty percent (50%) out of seventy (70) company respondents have 200 and above number of employees (large).

Aside from the innovative computer-generated services, the respondents in CALABARZON are also in need of work force which makes the other work and services possible to be carried out and delivered to customers. The table above also shows that firm size reflects how bigger the business is and how large the scope of its customer demands. Though all of its services are dependent to computers, employees still have the capacity to concentrate on more crucial duties that produce money and advance the business.

According to Agwu and Afieroho (2016), it is evident that Small and medium-sized businesses who have adopted product quality management have grown, as seen by the market shares, profitability levels, and sustainability of the majority of these businesses.

4.1.2 Certification status

The presence of certification indicates professionalism. It serves as evidence of credentials and enhances the company's reputation in the marketplace. It also increases the business's level of efficacy and legitimacy. It demonstrates how well businesses are informed about current market trends and technological advancements in order to support the success of business partners. The following table presents the distribution of company respondents of ICT companies in the CALABARZON Region in terms of certification status.

Table 5. Distribution of Company Respondents in terms of Certification Status

Certification Status	Frequency	Percentage
Non-ISO	41	58.6
ISO Certified	29	41.4
Total	70	100.0

Table 5 incorporates the profile of company respondents in terms of certification status. There are forty-one (41) or fifty-eight point six percent (58.6%) out of seventy (70) company respondents which are considered Non-ISO certified. Meanwhile, twenty-nine (29) or forty-one point four percent (41.4%) company respondents are considered ISO certified.

More than half of the respondents are NON ISO certified which entails that they are less capable of acquiring ISO certification due to specific matters. Normally, time and effort are just of the reasons of not having an ISO certificate. Since businesses like ICT firms in CALABARZON must satisfy a number of requirements under ISO before it can be certified. It might be difficult for these companies to comprehend these criteria, especially some of them are new firms without a quality management system in place.

On the other hand, less than half of the number of company respondents in CALABARZON have good standing because they are with ISO certification and have access to globally accepted best practices across the ICT industry. In addition, they are more possible to bring customer a consistent high-quality services, better information security, risk management, environmental performance, and quality management which are all areas that are included in the standards of being an ISO certified.

With this being said, the certification from the International Organization for Standardization (ISO) builds credibility and trust among customers, stakeholders, and other business partners. ISO accreditation ensures the organization complies with industry norms, particularly in trade scenarios according to IET (2021).

4.2 Extent of Quality Management Practices

4.2.1Customer Focus

It reveals that the extent of quality management practices in terms of customer focus is perceived by the respondents to a great extent with a composite mean of 3.57. It indicates that quality management is greatly achieved when the business firm prioritizes customer needs. It leads the company in figuring out the proper materials to use in satisfying the needs of the customers.

It is being supported by the International Organization for Standardization (2015) which states that the organization's long-term viability depends on its ability to anticipate the demands of its consumers and other interested parties. The main advantages include improved client loyalty, increased repeat business, increased customer value, improved

customer satisfaction, larger customer base, higher revenue, and increased market share.

Table 6. Extent of Quality Management Practices in terms of Customer Focus

	Mean	Verbal Interpretation
1. Has a program/system to improve customer service.	3.59	To a Great Extent
2. Conducts Customer feedback system to determine and measure external customer satisfaction (current and future) about its products and services.	3.44	To a Moderate Extent
3. Conducts Customer satisfaction survey to determine and measure external customer satisfaction (current and future) about its products and services.	3.44	To a Moderate Extent
4. Conducts Market researches/ surveys to determine and measure external customer satisfaction (current and future) about its products and services.	3.53	To a Great Extent
5. Conducts Customerdialogues to determineand measure external customer satisfaction (current and future) about its products and services.	3.54	To a Great Extent
6. Ensures a wide variety of mechanisms for customers to contactthe company easily and effectively (e.g. certain phone number, e-mail and website) are available.	3.64	To a Great Extent
7. Studies customer complaints to identify its patterns.	3.64	To a Great Extent
8. Prevents the sameproblems from recurring.	3.60	To a Great Extent
9. Uses data on customer expectationswhen designing new services and products.	3.54	To a Great Extent
10. Informs customers' current needs to the employees.	3.63	To a Great Extent
11. Relays customers' future needs to the employees.	**3.60**	To a Great Extent
12. Communicates customers' expectations to the employees.	**3.64**	To a Great Extent
Composite Mean	**3.57**	To a Great Extent

For instance, respondents perceived quality management practices as to a great extent (3.64) when a company ensures a wide variety of mechanisms for customers to contact the company easily and effectively (e.g. certain phone number, email and website) are available, studies customer complaints to identify its patterns, and communicates customers' expectations to the employees. This leads to an open communication between customers and the company wherein their needs and expectations are highly addressed.

It makes obvious that there would be a focus on customers as a key component because a company's primary objective is to provide goods or services to customers. Knowing the consumer and their needs is the first step in doing this. Next, make sure that customers are kept informed at every stage of the process, and gauge their satisfaction to see whether any requirements—spoken or otherwise—have been satisfied (Hammar, 2014).

Meanwhile, the use of customer feedback systems and customer satisfaction surveys to determine and measure external customer satisfaction (current and future) about its products and services is perceived as to a moderate extent (3.44) by the respondents. This helps to determine the comment of customers towards the services offered by the company. This also aids in achieving the objectives of the company especially in giving satisfaction to its customers.

According to Biswas (2019), the business needs to make sure that its goals are related to the demands and expectations of its clients. Customers' wants and expectations should be communicated throughout the company by the top management.

4.2.2 Leadership

The table below shows that the extent of quality management practices in terms of leadership is perceived by the respondents to a great extent (M=3.61). This includes the excellent strategies applied in the business. Also, efficient resources for its offered services is a great help for the success of quality management in the company.

Table 7. Extent of Quality Management Practices in terms of Leadership

	Mean	Verbal Interpretation
1. Makes sure that top management presents quality policy that is appropriate to the organization.	3.60	To a GreatExtent
2. Sees to it that top management identifies the activities needed to achieve quality objectives.	3.60	To a Great Extent
3. Ensures that top management aligns the organizational strategies to company vision.	3.67	To a Great Extent
4. Makes sure that top management provides strategies that are in congruence with company mission.	3.66	To a Great Extent
5. Sees to it that top management allocates sufficient budget for all identified strategies.	3.50	To a Great Extent

6. Makes sure that top management establishes and documents product or service specific processes.	3.61	To a Great Extent
7. Sees to it that top management regularly reviews policies and objectives for suitability.	3.59	To a Great Extent
8. Ensures that top management guarantees the availability of resources.	3.61	To a Great Extent
Composite Mean	3.61	To a Great Extent

The ability of the organization and its people to produce the desired results will be developed and improved, which will result in increased effectiveness and efficiency in achieving the organization's quality objectives, better coordination of the organization's processes, improved communication between organizational levels and functions, and more (International Organization for Standardization, 2015).

Respondents' remark to a great extent (3.67) as the company ensures that top management aligns the organizational strategies to company vision. Quality management can be achieved by formulating visionary and strategic steps for the success of business. This provides continuous improvements for the current and future state of the company which also aims to achieve quality service offered to the market. It is being supported by the argument of Biswas (2019) which insists that leadership in company quality management should establish a clear vision of the organization's future.

Furthermore, the statement that a company's top management allocates sufficient budget for all identified strategies is remarked by the respondents as to a great extent (3.50). Since quality services require quality materials and strategic business components, the company should provide an efficient budget for its operation. One of its top priorities is on how to control the cash flow for its fullest progress.

This is also supported by the argument of Biswas (2019). He adds that if top management – who is responsible for overseeing the cash flow of the firm – can understand the advantages of the system, it is far more likely to be used to its fullest potential.

4.2.3Engagement of People

The assurance that top management organizes regular meetings to communicate company quality goals to all departments is perceived by the respondents as to a great extent (3.60). It helps them monitor the status of the company by discussing the issues concerning the demands of their customers and the services offered to them. Regular meetings provide transparency to the employees and help them formulate strategies for the development of the business.

Table 8. Extent of Quality Management Practices in terms of Engagement of People

	Mean	Verbal Interpretation
1. Ensures that top management organizes regular meetings to communicate company quality goals to all departments.	3.60	To a Great Extent
2. Organizes cross-functional teams when developing programs to improve quality.	3.56	To a Great Extent
3. Sees to it that quality circles are in place to enable workers to actively participate in quality programs	3.49	To a Moderate Extent
4. Encourages employees to make suggestions.	3.40	To a Moderate Extent
5. Has an effective appraisal system for rewarding employeesfor their great efforts.	3.31	To a Moderate Extent
6. Make sure that lessons learned from thetraining programs are integrated in the work process.	3.51	To a Great Extent
7. Sees to it that its employees are trainedfor job related skills.	3.59	To a Great Extent
8. Concentrates on ongoing development	3.59	To a Great Extent
of personnel by establishing extensive training programs that covers all aspects of TQM.		
Composite Mean	3.51	To a Great Extent

ISO (2015) insists that all employees must be involved, and their individuality must be respected, in order to run a business effectively and efficiently. This involves holding regular meetings with the staff to address business-related issues where everyone's input and skill are highly monitored and improved. Respondents remark the effective appraisal system for rewarding employees for their great efforts as to a moderate extent (3.31). This certifies the appreciation and consideration of the company towards the efforts executed by its employees. As the employees work harder in achieving the company's objectives, the company itself gives back the favor to its employees which help to maintain its quality management practices.

This is linked with the argument of Hammar (2014) in which people are more likely to participate in accomplishing the organization's quality goals when they are recognized, empowered, and given opportunities to grow in their competence.

Eventually, table 8 shows that the overall perception of company respondents towards the extent of quality management practices in terms of engagement of people is marked as to a great extent (M=3.51). As has been said by the International Organization for Standardization (2015), competent, empowered and engaged people at all levels throughout the organization are essential to enhance its capability to create and deliver value.

4.2.4Process Approach

The table portrays the overall perception of company respondents towards the extent of quality management practices in terms of engagement of process approach to a great extent with a composite mean of M=3.62. It was being said that an organization can enhance the system and its performance by comprehending how this system generates results. When activities are perceived and controlled as interconnected processes that work as a coherent system, results that are consistent and predictable can be attained more effectively and efficiently. This is based on the statement of the International Organization for Standardization (2015).

The factors that will improve key activities of the organizations are perceived by company respondents as to a great extent (3.69). Though there may be unpredictable circumstances in the system, verified results of corrected individual processes put the company to stability. However, it can be prevented if the organization provides activities to improve its performance and ensure development.

Table 9. Extent of Quality Management Practices in terms of Process Approach

	Mean	Verbal Interpretation
1. Makes sure that its processes are designed to be reliable in order to minimize the chance of employee error.	3.56	To a Great Extent
2. Strictly analyzes significant variations inprocesses.	3.63	To a Great Extent
3. Determines root causes of variations in processes.	3.59	To a Great Extent
4. Makes corrections on discrepancies in processes.	3.61	To a Great Extent
5. Verifies results of corrected processes.	3.66	To a Great Extent
6. Strictly analyzes significant variations in outputs.	3.61	To a Great Extent
7. Determines root causes of variations inoutputs.	3.64	To a Great Extent
8. Makes corrections on discrepancies in outputs.	3.61	To a Great Extent
9. Verifies results of corrected outputs.	3.59	To a Great Extent
10. Focuses on the factors that will improve key activities of the organizations.	3.69	To a Great Extent
11. 1Systematically conducts extensive benchmarking of other companies' business processes.	3.59	To a Great Extent
12. Has site-wide standardized and documented operating procedures.	3.63	To a Great Extent
Composite Mean	3.62	To a Great Extent

According to Hammar (2014), It can frequently be difficult to comprehend, manage, and improve an entire system, making any attempt doomed to failure. Nevertheless, by viewing the system as a collection of smaller, interconnected processes, you may concentrate your efforts on the system's component processes to produce outcomes that are more consistent and dependable.

Moreover, making sure that its processes are designed to be reliable in order to minimize the chance of employee error is perceived as to a great extent with its estimated mean of 3.56. Formulating reliable processes is for the prevention of possible flaws among employees in the operation of the company. Also, it aims to give them the best and fastest way of providing solutions and making improvements in its operation.

As indicated from the study of Biswas (2019), quality management helps the company in evaluating risks, consequences, and impacts of activities on customers, suppliers, and other interested parties.

4.2.5Improvement

The table portrays the overall perception of company respondents towards the extent of quality management practices in terms of improvement as to a great extent with a composite mean of 3.54.

Seeking for improvement especially in the offered services of the business makes it more engaging to customers. As the ICT firm initiate development, it is able to identify what is lacking and should be provided on its offers.

ISO (2015) emphasized that Successful businesses constantly strive for improvement. It also improves the utilization of learning for improvement, consideration of both incremental and breakthrough development, and the company's and its employees' desire for innovation.

The formulation of strategy to help guide the change effort is perceived by the company respondents as to a great extent with an estimated mean of 3.64. If the company desires to improve its products and services, there should be strategies on how to do it. As the company accepts the changes, it will surely reach its effectiveness especially to customers.

Table 10. Extent of Quality Management Practices in terms of Improvement

	Mean	Verbal Interpretation
1. Identifies actual or potential crises for improvement.	3.49	To a Moderate Extent
2. Identifies major opportunities for improvement.	3.53	To a Great Extent

3. Creates a vision to help guide the change effort.	3.56	To a Great Extent
4. Forms a strategy to help guide the change effort.	3.64	To a Great Extent
5. Eliminates obstaclesto the planned change.	3.49	To a Moderate Extent
6. Modifies systemsthat undermine the change vision.	3.61	To a Great Extent
7. Adjusts structuresthat undermine the change vision.	3.50	To a Great Extent
Composite Mean	**3.54**	To a Great Extent

The identification of actual or potential crises for improvement in the company and the elimination of obstacles to the planned change are both perceived as to a moderate extent with its mean 3.49. Coming up with plans for improvement dissolves the possibility of arising problems. This results in achieving the valued objectives of the company with connection to its operations and services.

As ISO (2015) states, a greater emphasis is placed on root-cause investigation and determination, followed by prevention and remedial actions, when possible crises are identified as a part of the stages for improvement.

4.2.6Evidence-based Decision Making

The overall perception of company respondents towards the extent of quality management practices in terms of evidence-based decision making is to a moderate extent with the composite mean of 3.49. A thorough process of making choices in the business ensures the quality service and other offers of the company. Also, a thorough analysis of data keeps the business on track especially on its performance. According to ISO (2015), business choices that are based on the analysis and assessment of data and information are more likely to result in the outcomes that are sought. Making decisions can be a difficult process because there is usually some uncertainty involved.

The design for quality as one of the management practices in evidence-based decision making is seen by the company respondents as to a great extent with its mean 3.64. Through this, based from Hammar (2014), maintaining good records becomes crucial to facilitate many of the other Quality Management Principles.

Table 11. Extent of Quality Management Practices in terms of Evidence-based Decision Making

	Mean	Verbal Interpretation
1. Utilizes Pareto Analysis to diagnose quality problems and improve productionprocesses.	3.50	To a GreatExtent
2. Utilizes Control Charts to diagnose quality problems and improve production processes.	3.40	To a Moderate Extent
3. Utilizes Brainstorming to diagnose quality problems and improve production processes.	3.56	To a GreatExtent
4. Utilizes Quality Function Deployment (QFD) in the design of the products.	3.57	To a Great Extent
5. Utilizes Design for Quality in the design of the products.	3.64	To a Great Extent
6. Utilizes Concurrent Engineering (CE) in the design of the products.	3.49	To a Moderate Extent
7. Sees to it that inputs from the technical experts are solicited.	3.54	To a Great Extent
8. Conducts of research.	3.51	To a Great Extent
9. Solicits inputs from employees through meetings.	3.50	To a Great Extent
10. Conducts Focus Group Discussion (FGD) to selected clients or customer.	3.47	To a Moderate Extent
11. Conducts of disguised and non-disguised observation.	3.33	To a Moderate Extent
12. Reviews of mechanical observation (e.g. CCTV, recorder and audiometer).	3.37	To a Moderate Extent
Composite Mean	3.49	To a Moderate Extent

Conducting of disguised and undisguised observation for the success of achieving the settled objectives of the company is seen by respondents as to a moderate extent with the mean 3.33. Instinct is not enough in conducting observation. It is being emphasized that observation with concrete data is much more trustable especially when coping strategies are also necessary for the success of the company.

According to Hammar (2014), it is said that decisions made by firms that are based on data analysis and evaluation rather than on intuition about the issue are more likely to produce the intended results.

4.2.7Relationship Management

It is seen in Table 12 that the overall perception of company respondents towards the extent of quality management practices in terms of relationship management is to a moderate extent with the composite mean of 3.47. Building harmonious connection with the company's potential investors guarantees the great performance of the business. In addition, transparency also brings a great impact not just to the investors or suppliers but also to the consumers which ensures a long-term success of the ICT firm.

Table 12. Extent of Quality Management Practices in terms of Relationship Management

	Mean	Verbal Interpretation
1. Has an effective conflict resolution procedure in place.	3.40	To a Moderate Extent
2. Works hard to establish social bondswith customers.	3.63	To a Great Extent
3. Has fair treatment to its customers.	3.60	To a Great Extent
4. Commits time in managing customer relationships.	3.57	To a Great Extent
5. Commits resourcesin managing customer relationships.	3.57	To a Great Extent
6. Shares information to suppliers.	3.33	To a ModerateExtent
7. Shares future plansto suppliers.	3.30	To a Moderate Extent
8. Establishes joint development activities with suppliers.	3.37	To a Moderate Extent
9. Always gives feedback on the performance of suppliers' products.	3.50	To a Great Extent
Composite Mean	3.47	To a Moderate Extent

An organization must manage its interactions with relevant stakeholders, such as suppliers, for long- term success. Interested stakeholders have an impact on how well an organization performs. When an organization manages relationships with all of its interested parties to maximize their impact on its performance, it is more likely to experience sustained success as agreed by the International Organization for Standardization (2015).

As the company works hard to establish social bonds with customers, quality management will be achieved as seen by the company respondents as to a great extent with its mean of 3.63. It's not just a matter of purchasing and gaining but also strengthening the trust between the company and its customers. In order to establish quality management, the company should know the right way of building good relationship between them.

In connection, Hammar (2014) argues that it is crucial to manage these relationships since interactions with interested parties like customers, employees, and suppliers can affect how well a business performs.

Respondents mark the company that shares future plans to suppliers as to a moderate extent with the mean of 3.30. This shows transparency between partners where future plans are clearly shown to one another. The said plans should be aligned with the company's objective while addressing the suggestion of its partners.

Biswas (2019) claims that the term stakeholders is often used to describe interested parties. Relationship management with interested parties means that suppliers are not viewed as competitors and that expertise, vision, values, and understanding are shared.

4.3 Level of Sustainability

4.3.1Social Sustainability

The overall perception of company respondents towards the level of sustainability of information and communication technology companies in terms of social sustainability is very high with a composite mean of 3.52. Social harmony especially among business owner, investors, and customers promote effectivity to the services of the business. As the ICT firm build trust to its investors and customers, diversity and other negative factors will no longer hinder the business success. Trust increases cooperation and minimizes the cost of teamwork by reducing transaction costs. Only organized community participation and a strong civil society, including the government, can achieve this according from the study of Daneflorante (2019).

Table 13. Level of Sustainability of Information and Communication Technology Companies in terms of Social Sustainability

	Mean	Verbal Interpretation
1. Informs constantly the shareholders aboutthe organization's policies and developments.	3.47	High
2. Ensures the safety and health of employees.	3.56	Very High
3. Ensures high quality working conditions for employees.	3.54	Very High
4. Protects employees' rights.	3.54	Very High
5. Promotes employees' diversity.	3.61	Very High
6. Creates and promotes programs to prevent employee discrimination.	3.57	Very High
7. Develops customer education programs.	3.61	Very High
8. Participates in charitable actions and events.	3.46	High
9. Supports human capital development.	3.49	High
10. Supports programs to help the elderly.	3.41	High
11. Applies mechanisms which reconcile work and family life.	3.49	High
Composite Mean	3.52	Very High

Consequently, the company respondents mark very high (3.61) on the company that promotes employees' diversity and develops customer education programs. A company that considers and respects the differences of its employees are highly capable of achieving its objectives on sustaining social status of its performance. Its connectedness to other groups of individuals with respected diversity and values are also included for it to be called socially sustainable.

In line with this, Daneflorante (2019) also emphasizes community cohesion for mutual benefit, ties between groups of people, reciprocity, toleration, compassion, endurance, camaraderie, and love, as well as generally accepted moral principles of honesty, discipline, and ethics.

Besides, a company that supports programs to help the elderly falls on a high perception with a mean of 3.41. It could be approaches to help them achieve quality life in spite of the years they are living. Within the working environment, the company can provide appropriate design of the place which is align with the welfare and health of the elderly. Industrial designers can improve the quality of life for millions of poor people (such as the elderly, the disabled, and children) by creating designs that are appropriate for the local environment through the use of relevant legislative measures and "scientific design" methodologies (Kandachar, 2014).

4.3.2Economic Sustainability

Table 14 presents that the overall perception of company respondents towards the level of sustainability of information and communication technology companies in terms of economic sustainability is very high with its composite mean of 3.69. This explains that economic capital is intended to be preserved by the good deeds of individuals who are committed to preserving a stable economy. As stated by Daneflorante (2019), the maintenance of capital, or maintaining capital unharmed, is the generally accepted concept of economic sustainability.

Table 14. Level of Sustainability of Information and Communication Technology Companies in terms of Economic Sustainability

	Mean	Verbal Interpretation
1. Pays taxes.	3.80	Very High
2. Respects the legal framework of the business environment where activating.	3.76	Very High
3. Promotes local or area economy growth.	3.70	Very High
4. Promotes value for money.	3.70	Very High
5. Promotes profitability for investors.	3.70	Very High
6. Promotes employment opportunities.	3.63	Very High
7. Promotes local community enterprises.	3.64	Very High
8. Promotes local community organizations.	3.60	Very High
Composite Mean	3.69	Very High

The respondents perceived very high (3.80) on the company's act of paying taxes. This portrays their accountability of sustaining the economic capacity that could be more valued in the future. Also, conserving resources is a great deal to have its higher value in the passing time. As Lof (2018) insists, the concept of economy is for preserving resources, and the idea is used to describe and explain the value of resources both now and in the future.

Further, the initiation of the company of promoting local community organizations falls to a very high perception of the company respondents with a mean of 3.60. As the company promotes local community organizations, there will be positive economic change to disadvantage individuals. Also, it will spur the economic status of the organization itself rather than focusing on its previous errors. Economic policy needs to regularly apply anticipation and the precautionary principle and should lean on the side of prudence in the face of uncertainty and risk since people are at stake Daneflorante (2019).

4.3.3Environmental Sustainability

Table 15 highlights that the level of sustainability of information and communication technology companies in terms of environmental sustainability receives a very high overall perception by the company respondents with a composite mean of 3.61. Achieving greater profit while considering the environmental performance of the business makes it more appealing to consumers. The long-term objectives along with the long-term success were not just aimed for the present consumers but also for the sake of the future generations. Pettinger (2018) states that if natural resources will be safeguarded and maintained for future generations, that is what environmental sustainability is all about. Since those who care about the environment are concerned about the wellbeing of future generations, protecting the environment is absolutely essential.

Table 15. Level of Sustainability of Information and Communication Technology Companies in terms of Environmental Sustainability

	Mean	Verbal Interpretation
1. Monitors closely green promotional actions.	3.60	Very High
2. Adopts proper waste management techniques to help conserve natureand natural resources.	3.63	Very High
3. Tries to switch to renewable resources to lessen negative impact on the natural environment.	3.60	Very High
4. Supports environmental campaigns.	3.61	Very High
5. Applies for environmental certifications.	3.59	Very High
Composite Mean	3.61	Very High

For instance, the adoption of proper waste management techniques to help conserve nature and natural resources has a very high perception with the mean of 3.63. It helps sustain the source of raw materials that are highly needed by every individual. Managing ways also requires measures and steps in order to ensure that its process will not exceed to the necessary level of waste control that harms the welfare of people.

According to the perspective of Pettinger (2018), environmental sustainability aims to increase human wellbeing by safeguarding natural resources, even if it was social concerns that led to the need for it in the first place (e.g. intact forests, healthy air). In order to protect people from harm, the environment includes the sources of the raw materials used to meet human requirements and ensuring that the capacity of the sinks used to recycle human waste is not surpassed.

Furthermore, a very high perception (3.59) is given to the application of ICT for environmental certifications. Global green certification is one of its examples wherein individuals are motivated to take the initiative of taking care the environment by using ICT as a way of spreading awareness and promoting environmental conservation. Latterly, they receive environmental certificate for the good act that they did and for supporting such policies concerning the conservation of the environment.

The preceding policies are intended to ensure that the state of the planet's environment does not deteriorate to the point where future generations face water shortages, extreme weather events, and high temperatures (all of which could make living in some parts of the world very difficult, if not possible) (Pettinger, 2018).

4.4 Effect of Extent of Quality Management Practices to Level of Sustainability

An ICT firm that follows a sustainable approach are able to meet their demands without harming those of their stakeholders, customers, or the environment. They have made sustainability a part of their company culture. It is a tenet of business ethics, and a strong quality management system backs it up. The tables in this section show the effect of extent of quality management practices to level of sustainability in ICT industry.

Table 16. Effect of Extent of Quality Management Practices to Social Sustainability

	B	Std. Error	t- value	p-value	Decision to Ho	Verbal Interpretation
(Constant)	-.184	.346	-.532	.597	Failed to Reject	Not Significant
Customer Focus	.340	.160	2.128	.037	Reject	Significant
Leadership	.156	.188	.829	.410	Failed to Reject	Not Significant
Engagement of People	.375	.111	3.374	.001	Reject	Significant
Process Approach	-.072	.188	-.383	.703	Failed to Reject	Not Significant
Evidence-based Decision Making	.256	.183	1.405	.165	Failed to Reject	Not Significant
Improvement	-.098	.136	-.718	.475	Failed to Reject	Not Significant
Relationship Management	.095	.142	.668	.506	Failed to Reject	Not Significant

Dependent: Social Sustainability 21852; p-value= <.001- Significant Adjusted R2= .606 F-value= R2= .709;

Table 16 claims that the extent of customer focus as one of the quality management practices has a significant effect on social sustainability as indicated by p-value of .037, which is less than .05 level of significance. This explains that addressing the demands of consumers brings a positive impact in sustaining social growth. Also, a proper response to the demands of consumers helps the ICT Company to attract the interest of customers in their services.

According to CyberStates Report (2020), in-demand IT roles will include positions focused on cutting- edge technologies like artificial intelligence (AI), augmented and virtual reality (AR and VR), and the Internet of Things (IoT). This is just one example of how crucial a customer-focused approach is to ensuring social sustainability, as ICT companies are developing new services that can help meet customers' demands.

The extent of engagement of people as one of the quality management practices has a significant effect to social sustainability as indicated by p-value of .001, which is less than .05 level of significance. As employees are motivated and engaged in fulfilling their duties at work, the company is highly possible to succeed additionally, well-educated and capable people are can do their work aligned with the company's objectives.

This is supported by CompTia Cybestates Report (2020) which states that the practice of continuing education is common, yet it can be difficult to certify a person or business. Businesses that succeed will engage in skill development to broaden their market reach to new clients and industry verticals, collaborate with prospective rivals, and adopt newer technologies.

Meanwhile, table 17 manifests that the extent of relationship management has a significant effect to economic sustainability as indicated by p-value of .016, which is less than .05 level of significance. This signifies that the harmonious relationship among customers, other interested

parties, investors, and the company itself makes economic development well achieved. As what has been mentioned by International Organization for Standardization (2015), relationship management with its partner and supplier networks is a key performance indicator. The promotion of shared values and goals among interested parties is another benefit of this quality management strategy.

Table 17. Effect of Extent of Quality Management Practices to Economic Sustainability

	B	Std. Error	t- value	p- value	Decision to Ho	Verbal Interpretation
(Constant)	1.711	.357	4.796	<.001	Reject	Significant
Customer Focus	.244	.165	1.483	.143	Failed to Reject	Not Significant
Leader ship	.021	.194	.108	.914	Failed to Reject	Not Significant
Engagement of People	.029	.114	.255	.800	Failed to Reject	Not Significant
Process Approach	-.117	.193	-.603	.548	Failed to Reject	Not Significant
Evidence-based Decision Making	-.184	.188	-.979	.331	Failed to Reject	Not Significant
Improvement	.208	.140	1.485	.143	Failed to Reject	Not Significant
Relationship Management	.362	.146	2.480	.016	Reject	Significant

Dependent: Economic Sustainability F-value =7.091; p-value= <.001-Significant R2= .445; Adjusted R2= .382

Table 18. Effect of Extent of Quality Management Practices to Environmental Sustainability

	B	Std. Error	t-value	p-value	Decisionto Ho	Verbal Interpretation
(Constant)	.452	.350	1.292	.201	Failed to Reject	Not Significant
Customer Focus	.122	.162	.752	.455	Failed to Reject	Not Significant
Leader ship	.211	.190	1.109	.272	Failed to Reject	Not Significant
Engagement of People	.224	.112	1.996	.050	Failed to Reject	Not Significant
Process Approach	-.150	.190	-.791	.432	Failed to Reject	Not Significant
Evidence-based Decision Making	.460	.184	2.493	.015	Reject	Significant
Improvement	.221	.138	1.609	.113	Failed to Reject	Not Significant
Relationship Management	-.194	.143	-1.351	.181	Failed to Reject	Not Significant

Dependent: Environmental Sustainability F-value =15.746; p-value= <.001-Significant R2= .640; Adjusted R2= .599

Table 18 displays that the extent of evidence-based decision making has a significant effect to environmental sustainability as indicated by p-value of .015, which is less than .05 level of significance. This clearly proves that evidence-based decision making really affects environmental sustainability. Through this quality management practice, the company are able to use fair process and strategies in connection to its environmental objectives.

To support this claim, Hernandez and Ona (2016) assesses Green IT Adoption: Lessons from the Philippines Business Process Outsourcing Industry. Green Information Technology (GIT) is the application of information technology in ways that lessen negative effects on the environment, such as more effective energy consumption and waste reduction. Few studies have attempted to offer a comprehensive knowledge of GIT adoption in developing nations, despite the fact that GIT is crucial for creating a sustainable environment and strong economic performance. Their report investigates the techniques, processes and facilitators in GIT adoption within the Philippines Business Process Outsourcing Sector (BPO) (BPO). They used the revelatory multiple case study as a research approach in analyzing GIT adoption spanning IT procurement, IT applications as low carbon enabler, working environment, data center and IT end of life management.

4.5 Mediating Effect of Firm Size and Certification Status on the Relationship of Extent of Quality Management Practices and Level of Sustainability Performance

In order to determine the mediating effect of firm size to the relationship of the extent of quality management and the level of sustainability, the researcher conducted several trials of model building. The following tables discusses the significant relationship among quality management, firm size, and levels of sustainability.

As presented in Table 19, there is a significant relationship between firm size and quality management as indicated by p-value of <.001, which is less than .05 level of significance. Likewise, there is a significant relationship between social sustainability and quality management with the p- value of .010, which is less than .05 level of significance. This manifests that quality management is significantly related to both firm size and social sustainability which prove that the researcher succeeded in rejecting HO1 and HO2.

Four quality management practices such as design for quality, quality data and reporting, continuous improvement, and top management support for quality management are presented by Nguyen et al. (2018) as having a strong beneficial impact on sustainability performance. These procedures could be regarded as essential aspects of quality management that greatly advance sustainability objectives.

Table 19. Significant Relationship among Quality Management, Firm Size and Social Sustainability

		Quality Management	Firm Size	Social Sustainability
Quality Management	Pearson Correlation	1.000	.802	.305
	p-value	NA	<.001	.010
	Decision to Ho	NA	Reject	Reject
	Interpretation	NA	Significant	Significant
Firm Size	Pearson Correlation	.802	1.000	0.214
	p-value	<.001	NA	.075
	Decision to Ho	Reject	NA	Failed to Reject
	Interpretation	Significant	NA	Not Significant
Social Sustainability	Pearson Correlation	.305	.214	1.000
	p-value	.010	.075	NA
	Decision to Ho	Reject	Failed to Reject	NA
	Interpretation	Significant	Not Significant	NA

Meanwhile, the table shows that there is no significant relationship between firm size and social sustainability as indicated by p-value of .075, which is greater than .05 level of significance. Achieving collaboration and participative working environments to achieve social growth has nothing to do with the number of employees that a company has.

Since firm size and social sustainability have no significant relationship (Ho3), running a regression analysis to determine the direct, indirect and total effect of firm size is no longer necessary. This leads to a conclusion that firm size does not mediate the relationship between extent of quality management and level of social sustainability.

As presented in Table 20, there is a significant relationship between certification status and quality management as indicated by p-value of .010, which is less than .05 level of significance. The function of quality management to improve certification status provides the framework to review, adjust and focus activities into an authentic form that is unique to the company and can differentiate it from peers. As what has been said by Hardyment (2015), it offers a distinct structure for reporting and communications, enabling fruitful interaction with stakeholders and a coherence of emphasis that strengthens reporting. Likewise, there is a significant relationship between social sustainability and quality management with the p-value of .010, which is less than .05 level of significance. Successful sustainability policies can benefit the company in a number of ways, including innovation for growth such as new products, services, and business models can create new revenuestreams by addressing social or environmental concerns (Hardyment, 2015). This means that quality management is significantly related to both firm size and social sustainability which prove that the researcher succeeded in rejecting HO5 and HO6.

Table 20. Significant Relationship among Quality Management, Certification Status and Social Sustainability

		Quality Management	Certification Status	Social Sustainability
Quality Management	Pearson Correlation	1.000	.305	0.797
	p-value	-	.010	<.001
	Interpretation	NA	Significant	Significant
Certification Status	Pearson Correlation	.305	1.000	.254
	p-value	.010	-	.034
	Interpretation	Significant	NA	Significant
Social Sustainability	Pearson Correlation	.797	.254	1.000
	p-value	<.001	.034	-
	Interpretation	Significant	Significant	NA

Consequently, certification status has a significant relationship to social sustainability as shown in the p-value of .034, which is less than .05 level of significance. As long as a company is certified, social capital and development is highly achieved. Base from Lavinia (2021), for instance, price is the basis of the numerous fair trade sustainability certifications. Farming cooperatives are required to utilize the revenues to better their communities, such as by constructing schools, whereas businesses are required to pay farmers a minimum price to protect them if the market price falls. It is thought that the money will automatically lead to social and environmental advantages. Accordingly, the researcher succeeded in rejecting HO8 as the table shows that quality management and certification status have significant relationship to social sustainability.

Table 21 shows the results of regression analysis on the effect of extent of quality management practice to level of social sustainability.

Table 21. Significant Effect of Extent of Quality Management Practice to Level of Social Sustainability

Variables	B	SE	t-value	p-value	Decision to Ho	Verbal Interpretation
Constant	.057	.321	.177	.860	Failed to Reject	Not Significant
Quality Management	.978	.090	10.868	<.001	Reject	Highly Significant

Dependent: Social Sustainability F-value = 118.120; p-value= <.001-Significant R2= .635; Adjusted R2= .629

The extent of quality management practice has a significant effect of to the level of social sustainability as indicated in the F-value of social sustainability (118.120) with its p-value of <.001, which is less than .05 level of significance. Since the p-value of F is significant, it is manifested that the adjusted R-squared is .629. Moreover, the table also reveals the p-value of constant, which is .860 and identified as not significant. Quality management is classified as highly significant with the p-value of <.001, which is less than .05 level of significance. Hence, the Beta of quality management is .987.

Table 22. Significant Effect of Certification Status to Extent of Quality Management Practices

Variables	B	SE	t-value	p-value	Decision to Ho	Verbal Interpretation
Constant	3.159	.154	20.488	<.001	Reject	Highly Significant
Certification Status	.272	.103	2.641	.010	Reject	Significant

Dependent: Quality Management F-value = 6.974; p-value= .010-Significant R2= .093; Adjusted R2= .080

Table 22 shows the significant effect of certification status to the extent of quality management practices as indicated in the F-value of quality management (6.974) with its equivalent p-value of .010, which is less than .05 level of significance. Since the p-value of F is significant, the adjusted R-squared is .080. Moreover, the table also reveals that the constant is highly significant with its p-value of <.001, which is less than .05 level of significance. It is being incorporated with the Beta of 3.159. Consecutively, certification status is classified as significant with the p-value of .010, which is less than .05 level of significance, and receives a Beta of .272.

Table 23. Significant Effect of Certification Status to Level of Social Sustainability

Variables	B	SE	t-value	p-value	Decision to Ho	Verbal Interpretation
Constant	3.129	.192	16.277	<.001	Reject	Highly Significant
Certification Status	.279	.128	2.170	.034	Reject	Significant

Dependent: Social Sustainability F-value = 4.707; p-value= .034-Significant R2= .065; Adjusted R2= .051

Table 23 claims that certification status has a significant effect to the level of social sustainability as indicated in the F-value of social sustainability (4.707) with its p-value of .034, which is less than .05 level of significance. Since the p-value of F is significant, the adjusted R-squared is also presented with the value of .051. Moreover, the table also reveals that the constant is highly significant with its p-value of <.001 and obtains 3.129 value of Beta. Hence, certification status is listed as significant with the p-value of .034, which is less than .05 level of significance, and gains a Beta of .279.

Table 24. Significant Effect of Certification Status to Level of Social Sustainability

Variables	B	SE	t-value	p-value	Decision toHo	Verbal Interpretation
Constant	.054	.324	.167	.868	Failed to Reject	Not Significant
Quality Management	.973	.095	10.226	<.001	Reject	Highly Significant
Certification Status	.014	.085	.163	.871	Failed to Reject	Not Significant

Dependent: Social Sustainability F-value = 58.228; p-value= .<001-Highly Significant R2= .635; Adjusted R2= .624

Table 24 shows the significant effect of certification status to the level of social sustainability as indicated in the F-value of social sustainability (58.228) with its p-value of <.001, which is less than .05 level of significance. Since the p-value of F is significant, it is reflected that the adjusted R-squared is .624. Furthermore, the table also reveals the p- value of

constant, which is .868 and identified as not significant. Quality management is classified as highly significant with the p-value of <.001, which is less than .05 level of significance, and obtains Beta of .973. On the other hand, certification status is classified as not significant with a p-value of .871, which is greater than .05 level of significance.

Since the certification status has no significant effect on the level of social sustainability when quality management is present, therefore the null hypothesis that certification status of ICT companies does not mediate on the relationship between extent of quality management and level of social sustainability is supported.

Table 25. Significant Relationship among Quality Management, Firm Size and Economic Sustainability

		Quality Management	Size	Economic Sustainability
Quality Management	Pearson Correlation	1.000	.621	.068
	p-value	-	<.001	0.575
Size	Interpretation	NA	Significant	Not Significant
	Pearson Correlation	1.000	<.087	<.621
	p-value	-	.476	<.001
	Interpretation	NA	NA	Significant
Economic Sustainability	Pearson Correlation	.068	.087	1.000
	p-value	.575	.476	-
	Interpretation	Not Significant	Not Significant	NA

Table 25 presents the significant relationship among quality management, firm size and economic sustainability. It claims that there is a significant relationship between firm size and economic sustainability as indicated by p-value of <.001, which is less than .05 level of significance. It implies that economic sustainability indeed relies on the number of employees of a company wherein quality practices must be performed by well-trained employees to meet the target profit of the business. Meanwhile, the table shows that there is no significant relationship between quality management and economic sustainability as indicated by p-value of .575, which is greater than .05 level of significance.

However, Narasimhan (2014) states that TQM is a management innovation that has been utilized by firms for a considerable amount of time. Yet, there have been numerous claims that this breakthrough has fallen short of expectations and has been labeled a fad. Success stories were also reported in the same manner.

Nevertheless, since quality management and economic sustainability have no significant relationship, running a regression analysis to determine the direct, indirect and total effect of firm size is no longer necessary. This leads to a conclusion that firm size does not mediate the relationship between extent of quality management and level of economic sustainability.

Table 26. Significant Relationship among Quality Management, Certification Status and Economic Sustainability

		Quality Management	Certification Status	Economic Sustainability
Quality Management	Pearson Correlation	1.000	.305	.621
	p-value	-	.010	<.001
Certification Status	Interpretation	NA	Significant	Significant
	Pearson Correlation	.305	1.000	0.078
	p-value	.010	-	.520
	Interpretation	Significant	NA	Not Significant
Economic Sustainability	Pearson Correlation	.621	.078	1.000
	p-value	<.001	.520	-
	Interpretation	Significant	Not Significant	NA

As presented in Table 26, there is a significant relationship between firm size and quality management as indicated by p-value of .010, which is less than .05 level of significance. Likewise, there is a significant relationship between economic sustainability and quality management with the p-value of <.001, which is less than .05 level of significance. This manifests that quality management is significantly related to both firm size and economic sustainability. Meanwhile, the table shows that there is no significant relationship between certification status and economic sustainability as indicated by p-value of .520, which is greater than .05 level of significance.

According to Narasimhan (2014), the constantly shifting market conditions, also known as hyper competition, are driving manufacturers all over the world to seek out better business practices. Good standing is one of the criteria used to certify a company. Due to the intense competition, customers are increasingly empowered to expect more from businesses.

Since certification status and economic sustainability have no significant relationship, running a regression analysis to determine the direct, indirect and total effect of firm size is

no longer necessary. This leads to a conclusion that certification status does not mediate the relationship between extent of quality management and level of economic sustainability.

Accordingly, Table 27 reveals that there is a significant relationship between quality management and environmental sustainability as indicated by p-value of <.001, which is less than .05 level of significance. Meanwhile, the table shows that there is no significant relationship between firm size and quality management as indicated by p-value of .575, which is greater than .05 level of significance. On one hand, firm size is not significantly related to environmental sustainability as indicated by p-value of .101, which is greater than .05 level of significance. Alternately, Li (2017) assessed the impact of quality management on green innovation. Being the primary cause of many environmental problems, businesses are under increasing pressure from a variety of stakeholders to adopt green management strategies.

Nevertheless, since firm size has no significant relationship to environmental sustainability and quality management, running a regression analysis to determine the direct, indirect and total effect of firm size is no longer necessary. This leads to a conclusion that firm size does not mediate the relationship between extent of quality management and level of economic sustainability.

Table 27. Significant Relationship among Quality Management, Firm Size and Environmental Sustainability

		Quality Management	Size	Environmental Sustainability
Quality Management	Pearson Correlation	1.000	0.068	0.753
	p-value	-	0.575	<.001
	Interpretation	NA	Not Significant	Significant
Size	Pearson Correlation	.068	1.000	0.198
	p-value	.575	-	.101
	Interpretation	NA	NA	Not Significant
Environmental Sustainability	Pearson Correlation	0.753	0.198	1.000
	p-value	<.001	0.101	-
	Interpretation	Significant	Not Significant	NA

As presented in Table 28, there is a significant relationship between certification status and quality management as indicated by p-value of <.001, which is less than .05 level of significance.

Accordingly, there is a significant relationship between environmental sustainability and quality management with the p-value of .010, which is less than .05 level of significance. Meanwhile, the table shows that there is no significant relationship between certification status and environmental sustainability as indicated by p-value of .059, which is greater than .05 level of significance. In regard to the mentioned interpretation, Li (2017) argues that quality management exerts strong negative effects on the chances of deploying corporate green technology innovation and green management innovation. The detrimental effects of quality management on both green management and green technology innovation are considerably reduced by environmental regulation.

Table 28. Significant Relationship among Quality Management, Firm Size and Environmental Sustainability

		Quality Management	Certification Status	Environmental Sustainability
Quality Management	Pearson Correlation	1.000	0.753	0.305
	p-value	-	<.001	.010
	Interpretation	NA	Significant	Significant
Certification Status	Pearson Correlation	.305	1.000	.227
	p-value	.010	-	.059
	Interpretation	NA	NA	Not Significant
Environmental Sustainability	Pearson Correlation	.753	.227	.227
	p-value	<.001	.059	.059
	Interpretation	Significant	Not Significant	Not Significant

Conversely, since certification status and environmental sustainability have no significant relationship, running a regression analysis to determine the direct, indirect and total effect of firm size is no longer necessary. This leads to a conclusion that certification status does not mediate the relationship between extent of quality management and level of economic sustainability.

4.6 Proposed Sustainability Development Plan

By making the company more sustainable, ICT firms can increase their revenue and improve their bottom line. The amount of money sustainable firms make is increased by decreased operating expenses, increased innovation, an enhanced reputation, and a rise in the number of new clients that appreciate sustainability. It aids in demonstrating the expansion of shareholder value and brand value. Additionally, it helps with management and assimilation of

effective communication systems whereas economic, social, and environmental areas are benefited.

5. CONCLUSIONS

Based on the finding, the following conclusions were drawn from the study:

1. Most of the company respondents had a large number of firm size while the majority of them were considered as Non-ISO.
2. Quality management practices such as customer focus, leadership, engagement of people, process approach, and improvement were assessed to a great extent while evidence-based decision making, and relationship management were assessed to a moderate extent.
3. The information and communication technology companies had a very high level of social, economic and environmental sustainability.
4. Quality management practices such as customer focus and engagement of people had a significant effect on social sustainability while leadership, process approach, improvement, evidence-based decision making, and relationship management had no significance. Relationship management had a significant effect on economic sustainability while customer focus, engagement of people, leadership, process approach, improvement, and evidence- based decision making had no significance. The result showed that evidence-based decision making had a significant effect on environmental sustainability while customer focus, engagement of people, leadership, process approach, improvement, evidence-based decision making, and relationship management had no significance. It was concluded that firm size and certification status had no mediating effect on the relationship of extent of quality management to level of sustainability.
5. Quality management practices were significantly related with social sustainability and certification status, same with firm size and quality management that were also significantly related. Additionally, economic sustainability and certification status were significantly related to quality management which was also significantly related with environmental sustainability. Nevertheless, the result also concluded that there was no significant relationship between firm size and social sustainability. Economic sustainability was not significantly related with quality management and certification status.
6. The mentioned strategies of proposed sustainable development plan were highly applicable to achieve sustainability in ICT industry which could be essential for customer satisfaction, manageable relationship, and wise energy usage.

6. RECOMMENDATIONS

Based on the findings and conclusion drawn from the study, the following recommendations may be suggested:

1. Policymakers and government may address the importance of implementing efficiently and effectively the use of ISO certification among ICT firms and industries as well as a quality and sustainability management to attain quality service provided to the customers.
2. ICT companies may continue a consistent improvement in their services, quality customer care, top management approach, activities for employees, and transparency among interested parties to ensure the success of their operation.
3. ICT companies as well as company managers may carry on using resources such as investments, energy, natural resources, social processes, products, and labor practices in providing customer's needs and sustaining proper implementation of quality management and sustainability management in the business.
4. ICT companies and other business entities may consider the wise and proper use of natural and renewable resources and the proposed sustainability development plan of the study to have a direction on strategic allocation of company's resources in order to achieve their sustainability goals while providing the needs of consumers.
5. ICT companies and other business entities may consider a continuous use of quality management practices to attain a sustainable operations and good connection with the customers, business partners, and employees.
6. Future researchers may conduct further study with reference to the mediating role of firm size and company certification on the relationship between quality management practices and sustainability performance particularly among ICT companies in the CALABARZON Region.

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