

## Assessing the Practices of Total Quality Management Principles at Frontiers Printing and Publishing Limited

Elijah Afeliga\*

Texila American University, USA

### Abstract

This paper seeks to establish if there is a quality culture in Frontiers Printing and Publishing Limited, Identify areas for improvement and then provide the appropriate recommendations for their improvement.

Literatures related to the practices of total quality management were reviewed. A simple random sampling procedure was used in selecting the sample and closed ended questionnaires were administered for quantitative analysis.

Data was analyzed using excel software and the outcome of this study suggested that TQM is widely applied in areas such a top management commitment, vision and planning statement, customer focus at Frontiers Printing and Publishing Limited. However, areas that needed serious attention were education and training, and recognition and rewards. Focus group discussions were then recommended for the organization for both management and staff to enable them figure out how the organization can improve on those areas.

**Keywords:** Total quality management (TQM); Quantitative analysis; Frontiers printing and publishing limited

### Introduction

This paper seeks to establish if there is a quality culture in Frontiers Printing and Publishing Limited, Identify areas for improvement and then provide the appropriate recommendations for their improvement.

### Background of the Study

From the time when Johannes Gutenberg, of the German city of Mainz, developed European movable type printing technology with the printing press around 1439 and in just over a decade, the European age of printing began, there has been great revolution of this technology thereafter and demand for its products continue to rise even though there is a high level competition from other forms of media or platforms from the information communication technology sector because paper products serve as complements.

It is therefore not surprising that demand for printed products in Ghana is on the rise because of the expansion of the service and industry sectors of the economy of Ghana. According to the Statistical Service of Ghana, the service sector covers about 60% of the country gross domestic products.

Citifmonline.com, a local online media plate form, reports that the services sector grew by 8.8 percent in the first quarter compared to 5.2 percent in the fourth quarter of 2015. Information and Communication sub-sector grew by 4.3% compared with 1.3% growth recorded in the fourth quarter of 2015. The Health sub-sector expanded by 4.0%, same as recorded in the 3rd quarter of 2015.

However, the business, Real Estate and other services activates expanded by 2.2%, but the Community, Social and Personal Service Activities sub-sector recorded the least growth of 0.7%.

Another sector that depends on the printed products is the industry sector. Even though, industry sector in the first quarter of 2016 recorded negative 1.1 percent growth compared to 7.2 percent growth in the fourth quarter of 2015, within the industry sector, Electricity sub-sector grew by 5.8%, against 0.5% recorded in the first quarter of 2015. The Water and Sewerage subsector recorded a growth of 2.8% compared with 5.8% in the fourth quarter of 2015. The Mining

and Quarry sub-sector recorded the least growth of negative 3.4% compared with a contraction of 2.4% recorded in the fourth quarter of 2015.

Both sectors use printed materials ranging from, text books, forms, receipts, invoices, check books for their daily operation which are produced by printing firms. Due to the high demand for printed products, several printing firms have being setup in Ghana to service the needs of these customers. Due to that, competition has grown high and therefore, the success of organizations in this industry is now relying on the ability of these printing firms to embrace constant change.

Therefore, for a printing firm to be in business, one needs to provide its clients with quality products at all times. One of the recommended tools any organization can used is through the application of total quality management principles.

Total Quality Management has being acknowledged as an important subject in management theory and practice and has become a frequently used term in discussion concerning quality. PhD thesis in title Total Quality Management - aspects of implementation and performance.

Businessdictionary.com defined quality as a measure of excellence or a state of being free from defects, deficiencies and significant variations. It is brought about by strict and consistent commitment to certain standards that achieve uniformity of a product in order to satisfy specific customer or user requirements.

The American Society for Quality's website explains that Total

\*Corresponding author: Elijah Afeliga, Texila American University, USA, Tel: 0244 985498; E-mail: [afeliga2@yahoo.com](mailto:afeliga2@yahoo.com)

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Quality management describes a management approach to long term success through customer satisfaction. In a TQM effort, all members of an organization participate in improving processes, products, services, and the culture in which they work.

One of such printing companies set up in Ghana is Frontiers printing and publishing Ltd. From its website, it prides itself as an integrated solution provider in the printing and publishing. Frontiers has been in the printing industry since 2006 and is fast making its mark as a premier, dynamic company with the hallmark of quality, speed, efficiency and attention to detail. Incorporated under companies Code (Act 179) 1963 and licensed to engage in Security Printing, Commercial printing and Specialized Stationery Supplies, the company has been providing exceptional quality printing services to the private and public sector, as well as international organizations by integrating Total quality management in its operations. However, no audits have been undertaken to determine its level of practice in the organization.

Many studies have highlighted the importance of total quality management (TQM) for small and medium enterprises (SMEs) such as Frontiers Printing and Publishing Limited. However, little research has been published on how TQM principles have been implemented in SMEs. Drawing on this critical finding, this study made an attempt to identify the extent of TQM practices in Frontiers Printing and Publishing Limited.

## Objectives

1. To determine TQM practices in the organization,
2. Identify gaps in its application,
3. Make the necessary recommendation for its improvement.

## Research Question

To what extent has Frontiers Printing and Publishing Limited integrated Total quality management in its operations?

## Literature Review

### Introduction

Previous studies on Total Quality Management (TQM) indicates that researchers have defined TQM practices in different ways. However, In general, the TQM practices can be defined as “the critical areas which an organization must accomplish to achieve its mission by examination and categorization of their impacts” [1]. However, another researcher [2] defined TQM practices as “the essential things that must be achieved by the company or areas which will produce the greatest competitive leverage”.

### Practices

Different studies have provided different sets of practices considered essential to the success of TQM implementation. This made it difficult to reach a conclusion on the practices of TQM [3].

As such, no study has identified a common set of practices for successful implementation of TQM. Though there are some Quality Award models such as Malcolm Baldrige National Quality Award; European Quality Award (EQA, 1994); Deming Prize (1996); Kanji Business Excellence Model (KBEM) etc., which provide a useful framework for organizations and help in implementing TQM as well as even evaluating their business performance results [4].

Bayraktar [5] in his research identified: leadership, vision,

measurement and evaluation, process control and improvement, program design, quality system improvement, employee involvement, recognition and award, education and training, student focus, and other stake holders focus.

However, Kanji and Wallace [4] identified ten TQM practices: top-management commitment, customer focus and satisfaction, quality information and performance measurement, human resource management, employee involvement, teamwork, process management, quality assurance, zero defects, and communication.

Brah et al. [6] had identified: top management support, customer focus, employee involvement, employee training, employee empowerment, supplier quality management, process improvement, service design, quality improvement rewards, benchmarking, and cleanliness and organization.

According to ref. [7] factors such as top management commitment, leadership, people management, strategy, policy, partnership, management of processes and resource management are generally considered as the initial inputs to the implementation process of Total Quality Management.

The above mentioned literature review suggested that there are numerous areas TQM practices covers for the successful implementation of Total Quality Management.

## Research Methodology

The methodology used for this research is quantitative in nature. Rajasekar et al. [7] explained that Quantitative research is based on the measurement of quantity or amount. Here a process is expressed or described in terms of one or more quantities. The result of this research is essentially a number or a set of numbers. Some of the characteristics of quantitative research/method are listed by Rajasekar et al. [7] included:

- It is numerical, non-descriptive, applies statistics or mathematics and uses numbers.
  - It is an iterative process whereby evidence is evaluated.
  - The results are often presented in tables and graphs.
  - It is conclusive.
  - It investigates the what, where and when of decision making.
- Statistics is the most widely used branch of mathematics in quantitative research.

In this study, the questionnaires were used to obtain information. The survey instrument adopted in this research was a pre-tested questionnaire for its reliability and validity with some modifications that were suitable for this study.

The questionnaire consisted of 53 related questions in nine categories. They were closed ended in nature. These categories covered the ISO 9001-2015 criteria, which has been used for the evaluation of quality management in many organizations. There were five (5) respondents. The items were written in the form of statements to which the respondents responded using a five-point Likerts type scale (ranging from very high to very low).

A simple random sampling procedure was used in selecting the sample size from the population. A simple random sample is a subset of a statistical population in which each member of the subset has an equal probability of being chosen. The population happens to be the

staff and management of Frontiers Printing and Publishing Limited which were twenty (20).

## Data Analysis

### Introduction

Questionnaires that were administered were collected and analyzed using Microsoft excel programme. Below is the breakdown of the analysis.

### Departmental breakdown

The respondents to the questionnaire came from all departments of the organization. Below is the breakdown (Table 1).

**Scale 1 - Leadership:** Table 2 above indicates that with respect to leadership, respondents agreed that top management actively participated in quality management activities, and learnt quality-related concepts and skills. They also agreed that top management strongly encouraged employee involvement in quality management activities and empowered employees to solve quality problems. However, some respondents were unaware that top management

arranged adequate resources for employee education and training even though some strongly believed top management did. Most respondents agreed that top management discussed many quality-related issues in top management meetings. They also agreed that top management focused on product quality rather than yields and they also agreed that top management pursued long-term business success.

**Scale 2 - Supplier quality management:** The data in Table 3 above indicated that there was a large differences in their belief or otherwise that the firm had established long-term cooperative relations with suppliers. While others believed so, others did not. However, most respondents believed that the firm regarded product quality as the most important factor in selecting suppliers. From the data, it indicated that the firm always participated in supplier activities related to quality even though some are unaware of it. Also respondents believed the firm always gave feedback on the performance of suppliers' products however the respondents were unaware of that the firm had detailed information about supplier performance neither does the firm regularly conducts supplier quality audit.

**Scale 3 - Vision and plan statement:** Table 4 above indicates that respondents general believed that the firm has a clear long-term vision

Marketing	Design	Administration and finance	Production	Finishing
1	1	1	1	1

**Table 1:** The number of years of working experience of respondents in the organization ranged from 3 months to 7 years with a mode of 2 years.

	Strongly disagree	Disagree	Agree	Strongly agree	No idea
(1) Top management actively participates in quality management activities.		25%	50%		25%
(2) Top management learns quality-related concepts and skills.		25%	50%		25%
(3) Top management strongly encourages employee involvement in quality management activities.	25%		50%	25%	
(4) Top management empowers employees to solve quality problems.	20%		80%		
(5) Top management arranges adequate resources for employee education and training.		20%		40%	40%
(6) Top management discusses many quality-related issues in top management meetings.			60%	20%	20%
(7) Top management focuses on product quality rather than yields.		20%	40%	20%	20%
(8) Top management pursues long-term business success.	20%		40%		40%

**Table 2:** Scale 1 – Leadership.

	Strongly disagree	Disagree	Agree	Strongly agree	No idea
(1) Our firm has established long-term cooperative relations with suppliers.		40%	40%		20%
(2) Our firm regards product quality as the most important factor in selecting suppliers.			80%		20%
(3) Our firm always participates in supplier activities related to quality.	20%		40%		40%
(4) Our firm always gives feedback on the performance of suppliers' products.			20%	20%	60%
(5) Our firm has detailed information about supplier performance.				20%	80%
(6) Our firm regularly conducts supplier quality audit.					100%

**Table 3:** Scale 2 - Supplier quality management.

	Strongly disagree	Disagree	Agree	Strongly agree	No idea
(1) Our firm has a clear long-term vision statement			100%		
(2) The vision effectively encourages employees' commitment to quality management.		40%	60%		
(3) Our firm has a clear short-term business performance plan.		40%	20%		40%
(4) Our firm has a clear quality policy.		20%	60%		20%
(5) Our firm has a detailed quality goal.		20%	60%	20%	20%
(6) Our firm has effective quality improvement plans.		40%	60%		
(7) Various policies and plans are well communicated to the employees.		20%	60%		20%
(8) Employees from different levels are involved in making policies and plans.		20%	40%		40%

**Table 4:** Scale 3 - Vision and plan statement.

statement. However, 40% of the respondents disagreed that the vision effectively encouraged employees' commitment to quality management. Most of the respondents were either unaware or disagreed that the firm has a clear short-term business performance plan. However, most of the respondents believed the firm had a clear quality policy and quality goals and had effective quality improvement plans. They also agreed that these policies were well communicated to employees.

**Scale 4 - Evaluation:** Table 5 above shows that respondents disagreed that the firm regularly audited its business processes. They also disagreed that benchmarking was used in the organization. Respondents were unaware that the firm had detailed quality-related data such as defect rates and scraps. They were also unaware of quality-related data been used to evaluate the management of the firm. Neither are they aware of Quality-related data been used to evaluate the performance of all departments.

**Scale 5 - Process control and improvement:** Table 6 above shows that all respondents agreed that the firm was kept neat and clean at all times. Most of the respondents agreed that Process capability could meet production requirements. However, they disagreed that Production equipment was well maintained according to the maintenance plan.

They also disagreed that the firm implemented various inspections effectively (e.g., incoming, process, and final products). However most of the respondents agreed that the processes were designed in order to minimize the chance of employee error. They were also unaware of the firm using the Seven Quality Control (QC) tools extensively for process control and improvement nor the firm using Plan-Do-Check-Act (PDCA) cycle extensively for process control and improvement.

**Scale 6 - Product design:** Table 7 above indicates that most respondents were of the view that Quality function deployment (QFD) was used extensively in product design and that experimental design was used extensively in product design and that various departments participated in new product development. Most of them also agreed that the customer requirements were thoroughly considered in new product design.

**Scale 7 - Quality system improvement:** Most respondents agreed that the quality system in our firm was continuously been improved even though they were unaware of the use of ISO 9000 guideline for establishing the quality system. Most of the respondents agreed that the firm had a quality manual, procedure documents and work instructions for use (Table 8).

	Strongly disagree	Disagree	Agree	Strongly agree	No idea
(1) Our firm regularly audits various business processes	20%	60%			20%
(2) Our firm regularly conducts quality audits.	20%	60%			20%
(3) Benchmarking is used extensively in our firm.		40%	20%		40%
(4) Our firm uses quality-related costs extensively.			20%		80%
(5) Our firm has detailed quality-related data such as defect rates and scraps.					100%
(6) Quality-related data are used to evaluate the management of our firm.			20%		80%
(7) Quality-related data are used to evaluate the performance of all departments.			20%		80%
(8) Quality-related data are used to evaluate the performance of employees.		20%			80%
(9) Quality-related information is displayed at the shop floor.			40%		60%

Table 5: Scale 4 - Evaluation.

	Strongly disagree	Disagree	Agree	Strongly agree	No idea
(1) Our firm is kept neat and clean at all times.			100%		
(2) Process capability can meet production requirements.			80%		20%
(3) Production equipment is well maintained according to the maintenance plan.		60%	20%		20%
(4) Our firm implements various inspections effectively (e.g., incoming, process, and final products).		40%	20%		40%
(5) Our processes are designed in order to minimize the chance of employee error.		20%	40%		40%
(6) Our firm uses the Seven Quality Control (QC) tools extensively for process control and improvement.			20%		80%
(7) Our firm uses Statistical Process Control (SPC) extensively for process control and improvement.		20%			80%
(8) Our firm uses Plan-Do-Check-Act (PDCA) cycle extensively for process control and improvement.			20%		80%

Table 6: Scale 5 - Process control and improvement.

	Strongly disagree	Disagree	Agree	Strongly agree	No idea
(1) The designers are required to have some shop floor experience.		20%	40%	20%	20%
(2) The design are required to have some marketing experience.		40%	40%		20%
(3) The customer requirements are thoroughly considered in new product design.		20%	60%		20%
(4) Various departments participate in new product development.	20%	20%	60%		
(5) New product designs are thoroughly reviewed before production.		20%	40%		40%
(6) Cost is emphasized in the product design process.		20%	40%		40%
(7) Experimental design is used extensively in product design.			60%		40%
(8) Quality function deployment (QFD) is used extensively in product design.			60%	20%	20%

Table 7: Scale 6 - Product design.

**Scale 8 - Employee participation:** Table 9 shows that most respondents agreed that the firm had cross-functional teams and that Employees were actively involved in quality-related activities. However there were varied views on as to whether the firm implements suggestion activities extensively. Some agreed and some disagreed. Most respondents were of the view that employees were very committed to the success of our firm and that Employees were encouraged to fix problems they found.

**Scale 9 - Recognition and reward:** Table 10 indicates that most respondents agreed that the firm improved working conditions in order to recognize employee quality management efforts. They however disagreed that the firm had a salary promotion scheme to encourage employee participation in quality management. Most of them however agreed that position promotions are based on work quality in our firm. Anyway, most of the respondents disagreed that excellent suggestions

were financially rewarded. However, most of them agreed to the assertion that Recognition and reward activities effectively stimulated employee commitment to quality management.

**Scale 10 - Education and training:** Table 11 shows that most respondents were unaware of employees had been encouraged to accept education and training in our firm. However, some of them agreed that resources were available for employee education and training in the firm even though some were unaware. Respondents either disagreed or were unaware of most employees in the firm been trained on how to use quality management methods (tools). However, most of the respondents agreed that quality awareness education was given to employees. Most of them disagreed that specific work-skills training was given to all employees.

**Scale 11 - Customer focus:** Generally, Table 12 shows that most respondents agreed that the firm collected extensive complaint

	Strongly disagree	Disagree	Agree	Strongly agree	No idea
(1) The quality system in our firm is continuously being improved.		20%	40%	20%	20%
(2) Our firm uses ISO 9000 as a guideline for establishing our quality system.			20%		80%
(3) Our firm has a clear quality manual.		20%	40%		40%
(4) Our firm has clear procedure documents.			60%	20%	20%
(5) Our firm has clear working instructions.		20%	40%	40%	

Table 8: Scale 7 - Quality system improvement.

	Strongly disagree	Disagree	Agree	Strongly agree	No idea
(1) Our firm has cross-functional teams.		20%	60%		20%
(2) Our firm has several QC circles (within one function).		20%	40%		40%
(3) Employees are actively involved in quality-related activities.		20%	80%		
(4) Most employees' suggestions are implemented after an evaluation.		20%	20%		60%
(5) Employees are very committed to the success of our firm.			80%	20%	
(6) Employees are encouraged to fix problems they find.		20%	60%	20%	
(7) Reporting work problems is encouraged in our firm.		20%	80%		

Table 9: Scale 8 - Employee participation.

	Strongly disagree	Disagree	Agree	Strongly agree	No idea
(1) Our firm improves working conditions in order to recognize employee quality management efforts.		20%	80%		
(2) Our firm has a salary promotion scheme to encourage employee participation in quality management.		80%			20%
(3) Position promotions are based on work quality in our firm.			80%		20%
(4) Excellent suggestions are financially rewarded.	20%	60%			20%
(5) Employees' rewards and penalties are clear.		20%	40%		40%
(6) Recognition and reward activities effectively stimulate employee commitment to quality management.			40%	20%	40%
(7) Reporting work problems is encouraged in our firm.		20%	80%		

Table 10: Scale 9 - Recognition and reward.

	Strongly disagree	Disagree	Agree	Strongly agree	No idea
(1) Employees are encouraged to accept education and training in our firm.		20%	20%		60%
(2) Resources are available for employee education and training in our firm.		20%		40%	40%
(3) Most employees in our firm are trained on how to use quality management methods (tools).		40%			60%
(4) Quality awareness education is given to employees.		20%	80%		
(5) Specific work-skills training is given to all employees.		60%	40%		
(6) Employees are regarded as valuable, long-term resources worthy of receiving education and training throughout their career.		60%	20%		20%

Table 11: Scale 10 - Education and training.

	Strongly disagree	Disagree	Agree	Strongly agree	No idea
(1) Our firm collects extensive complaint information from customers.			60%	20%	20%
(2) Quality-related customer complaints are treated with top priority.		20%	40%	20%	20%
(3) Our firm conducts a customer satisfaction survey every year.	20%	20%	40%		20%
(4) Our firm always conducts market research in order to collect suggestions for improving our products.		20%	40%		40%
(5) Our firm has been customer focused for a long time.		20%	40%	20%	20%

Table 12: Scale 11 - Customer focus.

information from customers And Quality-related customer complaints were treated with top priority. They also agreed that the firm conducted a customer satisfaction survey every year and always conducted market research in order to collect suggestions for improving products. Most of the respondents agreed that the firm had been customer focused for a long time.

### Conclusion and Recommendation

This research study has successfully presented a vast array of literature on the practices of TQM in organizations, thereby accomplishing all the objectives of the present study. This effort is more systematic in explaining the fundamentals and components of TQM practices. The study covered practices of TQM in Frontiers Printing and Publishing.

The outcome of this study suggests that TQM is widely applied in areas such a top management commitment, vision and planning statement, customer focus. However, areas that need serious attention are education and training, and recognition and rewards. Focus group discussions can be organization for both management and staff to enable them figure out how the organization can improve on these areas.

It is concluded that organizations that want to implement TQM effectively must have patience because TQM takes a long time to get implemented and to have fruitful results. It requires major changes in cultural aspects as well as employee mindset in an organization.

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