Research, Innovation and Total Quality Management as Essentials of Entrepreneurship Success in a Competitive World

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Abstract
Entrepreneurship, a process of planning, launching and running new Businesses, is in many ways the history of great wealth and of great failure. Some entrepreneurs have been very successful and have accumulated vast fortunes from their efforts. Long-term success of any entrepreneurial effort cannot be accidental but by doing the right thing at the right time. This paper therefore discusses research, innovation and total quality management (TQM) as essentials and the right approach and philosophy that entrepreneurs must adopt in order to succeed in an era of one-world market (globalization). The paper recommended that entrepreneurs should study, understand and adopt the principles, tools and techniques of TQM in their operations in order to succeed and become key players in the global market.

Keywords: Entrepreneurship, Innovation and Globalization, Research, Total Quality Management

Introduction

The development of small businesses in Nigeria and other parts of the world has become an amazing story. The value of goods and services they produce and the new jobs they create make the small business sector one of the greatest economic powers in the world. The growing popularity of small business is its acceptance as part of the mission of many high schools, colleges and universities, where entrepreneurship and small business management are now

academically respected disciplines. Virtually unheard of 30 years ago, courses in entrepreneurship are now offered by both secondary and tertiary institutions today in Nigeria.

As many school graduates are encouraged to establish their own businesses rather than seeking paid employments, which are not available, they need to realize that the trend in business is to become active globally; while those in business need to understand at least what the challenge is and what the rewards may be. In an age of one-world market (that is globalization) and global competition, entrepreneurs can only survive if they offer quality products or services that satisfy their customers. To succeed, research, innovation and total quality management have become essential part and the right philosophy for entrepreneurship success respectively.

This paper therefore discusses total quality management in business organisations as the right approach to guarantee long term success in a world of global competition and it be discussed under the following sub-headings:

Meaning of Entrepreneurship and Entrepreneurs

Entrepreneurship has been defined in different ways by many authors. Some of the definitions include: "Entrepreneurship is the process of planning, organising, operating, and assuming the risk of a business venture. An entrepreneur, in turn, is someone who engages in entrepreneurship" (Griffin, 2011). According to Koontz and Weihrich (2015) entrepreneurship implies "dissatisfaction with how things are and an awareness of a need to do things differently". Innovation comes about because of this.

Reddy (2010) also defined an entrepreneur as "an innovator of business enterprise who recognizes opportunities to introduce a new product, a new process or an improved organization, and who raises the necessary money, assembles the factors for production and organizes an operation to exploit the opportunity". Bachenheimer (2018) described entrepreneurship as "a mindset – a way of thinking and acting. It is about imagining new ways to solve problems and create value. Fundamentally, entrepreneurship is about the ability to

recognize (and) methodically analyze (an opportunity, and ultimately to capture (its) value. Roxarzade (2018) defined entrepreneurship as "the persistent progression towards an innovative solution of a key problem. It's the constant hunger for making things better and the idea that you are never satisfied with how things are".

The Role of Entrepreneurship in the Society

The history of entrepreneurship and of the development of new businesses is in many ways the history of great wealth and of great failure. Some entrepreneurs have been very successful and have accumulated vast fortunes from their entrepreneurial efforts while many new businesses fail within the first few years of founding. Entrepreneurial business success accounts for most new job creation. Major innovations are also associated with entrepreneurs, for example, small firms and individuals invented the personal computer, the transistor radio, and the photocopying machine, the jet engine, etc. They are also responsible for the manufacture of helicopter and power steering to mention a few (Griffin, 2011). Many big corporations also depend on the small businesses to function. The success of the entrepreneurs and small businesses is by extension the success of bigger organisations and by extension, the economy at large.

Total Quality Management (TQM)

Total quality management (TQM) is a philosophy that emerged in the 1980s and since its emergence, it has revolutionised business operations. How well TQM has been implemented in organisations has been a major determinant of business success or failure today. Yakowu (2002) cited in Enikanselu (2011) noted that organizations that adopt TQM as a way of life and not just as a programme end up being relatively more successful than those who do not incorporate TQM in their system of doing things.

As a result of globalization, businesses have been brought under intense pressure to offer quality products and services due to international competition. Quality as defined by Enikanselu (2011) and

Griffin (2011), "is the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs". Eight dimensions of quality according to Enikanselu (2011) included: performance, features, reliability, conformance, durability, serviceability, aesthetics and perceived quality.

According to Koontz and Heinz (2015), TQM involves the organisation's long term commitment to the continuous improvement of quality throughout the organisation and with active participation of all members at all levels, to meet and exceed customer expectations. This top management driven philosophy is considered a way of organisational life. In a sense, TQM is simply effective management.

Wikipedia (2018) describes TQM as consisting of organisation-wide efforts to install and make permanent a climate where employees continuously improve their ability to provide on demand products and services that customers will find of particular value. "Total quality management" emphasizes that departments in addition to production (for example sales, engineering, and design) are obligated to improve their operations. "Management" emphasizes that executives are obligated to actively manage quality through funding, training, staffing and goal setting.

Total quality management is simply an approach to success through continuous improvement. It is a long term effort by an organisation to change its own management approach towards the production of goods and services that continuously meet agreed customer requirements at the lowest cost by releasing the potential of all employees. To improve performance continuously at lowest cost, people should know what to do, how to do it, have the right tools to do it, be able to measure performance and receive feedback on current levels of achievement.

Major Ingredients in TQM

TQM involves five basic dimensions as shown in the figure below. These include: strategic commitment, employee involvement, technology, materials and methods. Each of these ingredients is

important and must be addressed effectively if the organisation expects to truly improve quality.

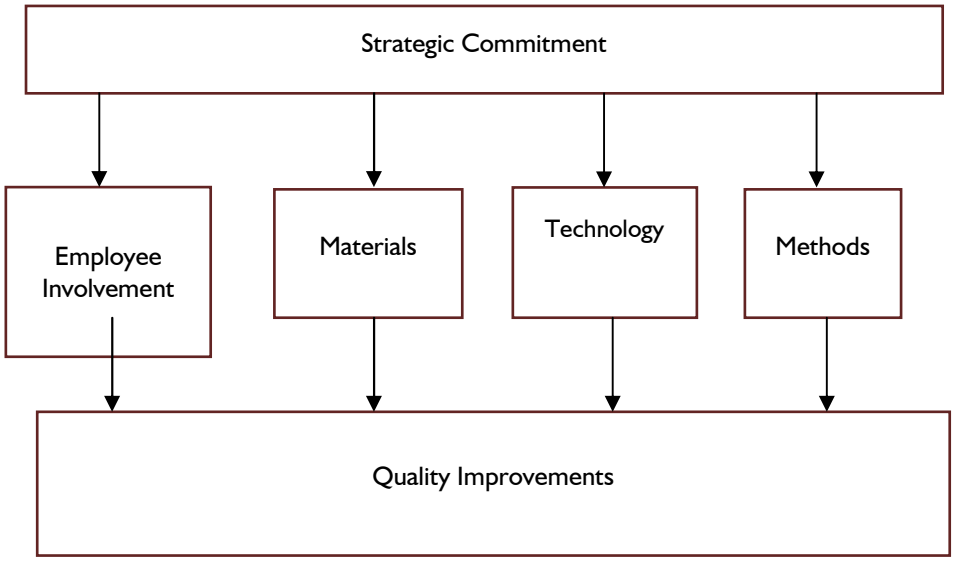

Figure 1: *TQM Major Ingredients*

Source: *Management Principles and Practices by R. W. Griffin (2011:662).*

1. **Strategic Commitment -** The starting point for TQM is a strategic commitment by top management. Such commitment is important for several reasons. First, the organization culture must change to recognize that quality is not just an ideal but also an objective goal that must be pursued. Second, a decision to pursue the goal of quality carries with it some real costs – for expenditures such as new equipment and facilities, thus, without a commitment from top management, quality improvement cannot be achieved in an organisation.

2. **Employee Involvement -** This is another critical ingredient in QTM. Virtually all successful quality enhancement programmes involve making the person responsible for doing the job

responsible for making sure it is done right; hence, employee involvement is a critical component of quality improvement.

3. **Technology -** New forms of technology are useful in TQM programmes. Automation and robots, for example, can often make products with higher precision and better consistency than real people.
4. **Materials -** Another part of TQM is improving the quality of the materials that organizations use.
5. **Methods -** Improved methods can improve product and service quality. Methods are operating systems used by the organisation during the actual transformation process.

Murray (2018) also identifies a number of key principles in defining TQM. They include Executive Management, Training, Customer focus (customer satisfaction), decision making (quality decisions should be made based on measurements), methodology and tools (use of appropriate methodology and tools ensures that non-conformance incidents are identified, measured and responded to consistently). Others are continuous improvement (both in manufacturing and quality procedures), company culture (developing employees ability to work together to improve quality) and employee involvement.

TQM Tools and Techniques

There are a number of tools available to ensure that continuous improvement is successful. Murray (2018) identifies three of those tools to include: process mapping, root cause analysis and the plan do check act (PDCA) cycle.

Process Mapping

Any continuous improvement effort has to begin with an accurate understanding of the process that has been identified for improvement. The process can be in any part of a company's business, but it must be able to be mapped to identify the flows that make up

the process. For example, in the supply chain, a business process could be the manufacturer of a finished good, the purchase of goods from a vendor, or the service of an item sold to customers. The mapping of any of these processes involves identifying and documenting the physical flow as well as the information flow.

The process mapping will show graphically the flows in the process from start to finish, which will include activities, personnel, and the outcomes. The benefit that process mapping gives to providing continuous improvement is that it defines the scope of the process, the interface with other processes, and a starting point from which improvement can be measured against.

Root Cause Analysis

Root cause analysis is the manner in which a business will determine the root cause of a problem, incident, or quality concern. This is achieved by these three steps, which drive toward identification of the root cause: Analysis, Data gathering, and Validation. There are three phases which make up a root cause analysis process.

(a) **Open Phase** – This initial phase allows participants to brainstorm the issue to identify as many possible root causes. In this phase, the team can create a cause and effect diagram which can be useful during brainstorming sessions.

As part of this process, the team can identify their possible causes with one of five areas listed on the cause and effect diagram. Those cause categories are manpower, methods, materials, machines and measurements. The team can then organize their ideas for the root cause around those categories.

(b) **Narrow Phase** – In this phase, the team reduces the number of possible root causes to a number that can be focused on. Each of the possible root causes identified in the open phase is discussed by the team in more depth to determine if they should be kept.

(c) **Closed Phase** – In this final stage, the team must come to a consensus on a route cause. This will involve validating the root cause based on evidence, whether that is using measureable data or subjective evidence from interviews with staff, customers or vendors. The analysis of measurable data can be performed using a number of statistical methods such as a scatter plot diagram, check sheets to identify the frequency of an event, or using Pareto Chat.

Plan-Do-Check-Act (PDCA) Cycle

The PDCA cycle created by W. Edwards Demming, the architect of TQM, is a simple approach for carrying out change. The PDCA cycle consists of four phases; plan, do, check, and act.

Plan – The planning stage usually begins after a company has been through a root cause analysis and identified an issue or problem that needs to be addressed. The business will then plan how the improvements need to be achieved.

Do – Following the planning stage, the business will then proceed with the changes that have been planned in order to address the issue identified in the root cause analysis. This may be as simple as purchasing a new piece of equipment for a production line, or complex such as changing the new way in which vendors are evaluated.

Check – After the business has followed the plan and made changes to address the issue or problem, the check phase could be used to validate that the changes made have had the required results. If the check phase does not validate that issue has been resolved, then the business will need to start the PDCA cycle again at the planning stage and develop a new plan to achieve necessary results.

Act – The final phase of the PDCA cycle requires that once the issue has been solved, the business should incorporate the changes into

their standard operating procedures and if necessary, roll out the changes to other parts of the business.

Beyond strategic context of quality, managers can rely also on several specific tools and techniques for improving quality. Among the most popular today are: value added analysis, benchmarking, outsourcing, reducing cycle times, ISO 9000:2000 and ISO 14000, statistical quality control, and six sigma (Griffin, 2011).

Value Added Analysis – Value added analysis is the comprehensive evaluation of all work activities, materials, flows and paperwork to determine the value that they add for customers. Such an analysis often reveals wasteful or unnecessary activities that can be eliminated without jeopardizing customer service. For example, Hewlett-Packard cut down its standard contract form from 20 to 2 pages and experienced an 18 per cent increase in its computer sales.

Benchmarking – Benchmarking is a continuous process of comparing and learning a company strategy, products and processes with some other similar firms which are best in the industry, with a view to know how they achieved excellence and then map out changes in strategies, products, and processes to match and surpass them.

Outsourcing – Outsourcing is the process of subcontracting services and operations to other firms that can perform them cheaper or better.

Reducing Cycle Time – This is another TQM tool. Cycle time is the time needed by the organisation to develop, make and distribute products or services. A company that develops, makes and distributes products and services faster than its competitors will definitely be ahead of the competitors. Dumaine (1989) in Enikanselu (2011) and Griffin (2011) identified six guidelines to increase the speed of their operations. These are:

1. Start from scratch. (It is usually easier than trying to do what the organisation does now faster.
2. Minimise the number of approvals needed to do something.

3. Use work teams as a basis for organisation. Teamwork and cooperation work better than individual effort and conflict.
4. Develop and adhere to a schedule.
5. Do not ignore distribution. Making something faster is only part of the battle.
6. Integrate speed into the organisation's culture. If everyone understands the importance of speed, things will actually get done more quickly.

ISO 9000:2000 and ISO 14000

ISO 9000 refers to a set of quality standards created by the International Organisation for Standardisation. These standards cover such areas as product quality testing, employee training, record keeping, supplier relations, and repair policies and procedures. Firms that want to meet these standards apply for certification and are audited by a firm chosen by the ISO's domestic affiliate. Many firms report that merely preparing for ISO 9000 audit has been helpful by pointing out obvious areas where quality can be improved (Enikanselu, 2011). ISO 14000 is an extension of the same concept to environmental performance. Specifically, ISO 14000 requires the firms document and how they are using raw materials more efficiently, managing pollution, and reducing their impact on the environment.

Statistical Quality Control

Statistical Quality Control (SQC) is concerned with managing quality, rather than improving quality. It is a set of specific statistical technique that can be used to monitor quality. Acceptance sampling involves sampling finished goods to ensure that quality standards have been met. Here, samples of process outputs are taken and analysed. If they are within the acceptable limits, the outputs are considered to be under control. In-process sampling involves evaluating products during production so that needed changes are made. The advantage of in-process sampling is that it allows companies to detect problems before they accumulate.

Six Sigma

Six sigma was developed in the 1980s for Motorola. The tool can be used by manufacturing or service organisations. The six sigma method tries to eliminate mistakes. Although firms rarely obtain six sigma quality, it does provide a challenging target. Sigma refers to a standard deviation, so a six sigma defect rate is 6 standard deviations above the mean rate; 1 sigma quality would produce 690,000 errors per million items (69% errors). 3-sigma is challenging – 66,000 errors per million (6.6% errors). 6-sigma is obtained when a firm produces a mere 3.4 mistakes per million (0.0034% errors). Implementing six sigma requires making corrections until errors virtually disappear.

According to Mougboh (2006:7) many organizations in Nigeria are operating below three sigma quality levels. That means they could be losing up to 25-40% of their total revenue due to processes that deliver too many defects; defects that take up time and effort to repair as well as creating unhappy customers. Six sigma may not be popular among many entrepreneurs in Nigeria but it has proved to be the key for survival in today's corporate world where only the best survives.

Pareto Analysis

Vilfred Pareto, an economist, suggested that 80 per cent of the problems are the result of only 20 per cent of the causes. The Pareto analysis organizes errors, problems or defects so that the most important problems can be isolated and addressed first. The 80 – 20 rule, as stated above, suggests that by removing 20 per cent of the causes, 80 per cent of the errors can be removed.

Benefits of TQM

Quality has been found to be one of the most important factors that have direct relationship with demand for a product. It equally has strategic impact on the image and economic well-being of companies. Quality affects firms in the following ways:

i. **Improved Profitability:** Continuous improvement in quality means continuous reduction in waste, and

continuous increase in demand. The increase in demand will translate to increase in share of the market. All these will enhance the profit level of the organisation.

ii. **Image and Reputation:** The image and reputation of the company is also affected positively as the organisation will be nationally and internationally respected.

iii. **Competitive Advantage:** Companies that improve quality through TQM have competitive advantage over others without it.

iv. **Product liability** would be reduced to the minimum and avoid legal embarrassment in terms of lawsuits and litigation.

v. **Productivity is enhanced** as the number of defects is likely to decrease, causing fewer returns by customers and attendant costs, efficient utilization of organizational resources and substantial reduction of quality inspectors and reduction in labour costs.

vi. **Participation and relevance in international market** is enhanced as product can meet quality and price expectations of the global market.

vii. **Costs**: Improved quality has reduced cost implication to the operation of the company.

TQM and Research

Research has been defined in a number of ways, and while there are similarities in the definitions, there is no single, all-encompassing definition that is embraced by all who engage in it. Some of the definitions of research include:

"Any creative systematic activity undertaken in order to increase the stock of knowledge, including knowledge of man, culture and society and the use of this knowledge to devise new applications (Wikipedia (online).

The Merrian-Webster Online Dictionary defines research as "studious inquiry or examination; especially: investigation or experimentation aimed at the discovery and interpretation of facts,

revision of accepted theories or laws in the light of new facts or practical application of such new or revised theories or laws".

Another definition of research is given by Business Dictionary online as "systematic investigative process employed to increase or revise current knowledge by discovering new facts. It is divided into two general categories:

(i) Basic research, which is aimed at increasing scientific knowledge and

(ii) Applied research, which is effort aimed at using basic research for solving problems or developing new processes, products or techniques".

From the definitions of research, and careful analysis of TQM components, tools and techniques, one can observe that TQM in an organization is and makes use of scientific research methods and processes in solving quality problems in business and thereby enhancing customer satisfaction.

The specific areas of research covered in TQ M include:

(a) **Marketing research** which investigates marketing issues such as: markets and market segments, products and brands, advertising (promotion), customer expectations and satisfaction.

(b) **Production and Operations research** which applies scientific methods to the management of organized systems in business, industry, government and other enterprises. It is the discipline of applying advanced analytical methods to help make better decisions.

TQM tools like statistical quality control (SQC), six sigma, Pareto analysis, economic order quantity, etc. are operations research techniques.

Conclusion

Although it is difficult to determine precisely what leads to success in managing small businesses, some of the factors that may enhance success of a business enterprise, according to Byrd and Megginson

(2015) include: serving an adequate and well-defined market for the product, acquiring sufficient capital, recruiting and using human resources effectively, obtaining and using timely information, coping effectively with government regulations, having expertise in the field on the part of both the owner and the employees and being flexible. All of these factors are embedded in TQM principles and Edward Deming's self-developed 14 points (methods) of management.

Entrepreneurs who intend to succeed on the long-term basis rather than short-term gains need to understand and adopt the philosophy of Total Quality Management which is a real and meaningful effort by a firm to approach the business by making quality a guiding factor in everything the organisation does; defining companies' role to stay in business and provide jobs through innovation, research, constant improvement and maintenance rather than to make money.

According to the European Foundations for Quality Management Model (EFQM), excellent organizations achieve and sustain levels of performance that meet or exceed the expectations of all their stakeholders. The fundamental concepts of excellence include: harnessing creativity and innovation by which excellent organizations generate value and levels of performance through continual improvement and systematic innovation by harnessing the creativity of their stakeholders; managing with agility (that is, ability to identify and respond effectively and efficiently to opportunities and threats), adding value for customers, creating a sustainable future, developing organization capability, leading with vision, inspiration and integrity, succeeding through the talent of people and sustaining outstanding results. All these would not be possible without research. Research according to Mariotti and Glackin (2016) prepares you for success; whether you have a product or service you want to market or searching for a market opportunity with the aim of creating a product or service to fill that need.

Way Forward

Entrepreneurs must realize that creativity does not just happen in organizations: an environment in which creativity can flourish for the workers and the entrepreneur must be established. In order to create a culture of innovation, Scarborough (2013) suggests that entrepreneurs can stimulate creativity and create a culture of innovation by:

i. Including creativity as a core company value beginning in the mission statement and
ii. Embracing diversity-Hiring a diverse work force from different backgrounds, cultural experiences, hobbies and interests that can provide an organization with a crucial raw material needed for creativity.

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