THE APPLICATION OF QUALITY MANAGEMENT FOR UNIVERSITY CAFETERIA BUSINESS IMPROVEMENT

RUSHAZLIZA BINTI RUBAIN

BACHELOR OF TECHNOLOGY MANAGEMENT (TECHNOLOGY INNOVATION) WITH HONORS

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2019

THE APPLICATION OF QUALITY MANAGEMENT FOR UNIVERSITY CAFETERIA BUSINESS IMPROVEMENT

RUSHAZLIZA BINTI RUBAIN

The report is submitted in partial fulfillment of the requirements for the award Bachelor's Degree in Technology Management (Technology Innovation)

Faculty of Technology Management and Technopreneurship
UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2022

DECLARATION

I declare that this research project title “The Application of Quality Management for University Cafeteria Business Improvement” is the result of my research except the cited in the references. The research project has not been for any degree and is not concurrently submitted in the candidature of any other degree.

Signature : 

Name : Rushazliza Binti Rubain

Date : 16 June 2022

SUPERVISOR'S AND PANEL APPROVAL

I hereby declare that I have read this thesis research and, in my opinion, this thesis issufficient in terms of scope and quality for the award of Bachelor of Technology Management and Technopreneurship with Honours

Signature : .....

Supervisor : DR. KAMARUDIN BIN ABU BAKAR

Date : 18. 1. 2023

Signature : .....

Panel : TS DR. YUSRI BIN ARSHAD

Date : 18. 1. 2023

DEDICATION

I would like to dedicate the success of this research project especially to my parents which are my mother Rahmah Binti Surip and my stepfather Azry Bin Samdin and also my family members. This report will be dedicated to them because I want to thank them for all the sacrifices that they made for me while I have been studying at this university and helped in terms of advice, finance, and encouragement support in the process to make this report. Next, I would like to express a lot of gratitude to my supervisor, Dr. Kamarudin Bin Abu Bakar, and my friends that give a lot of help while completing this Final Year Project.

ACKNOWLEDGEMENT

First of all, I would like to praise and thank Allah S.W.T for His Greatness and permission-giving me the time, healthy life, and opportunity to complete my first final year project titled "The Application of Quality Management for University Cafeteria Business Improvement" as fulfilling the compulsory requirements of Universiti Teknikal Malaysia Melaka (UTeM) and the Faculty of Technology Management and Technopreneurship (FPTT).

I appreciate this opportunity to express gratefulness to those who made this project become possible. Besides that, I want to give a big thanks to my supervisor Dr. Kamarudin Bin Abu Bakar that gives a lot of guidance during this semester in session 2021/2022 on his knowledge expertise, suggestion, and useful comment while completing this research project.

I also would like to extend my thankfulness to the most precious persons in my life, my mother and stepfather for all their moral support, financial and advice in all aspects during the report completion from the beginning to the end. Lastly, I want to express my gratitude to all respondents that spend their time helping me to fulfill the questionnaire. I am truly appreciative and honestly grateful to all that participate while making this project.

ABSTRACT

Quality management introduces the techniques used to reduce process variation in a controlled process. This is one of the approaches for the Universiti Teknikal Malaysia Melaka (UTeM) community benefits of having the best services by implementing total quality management that employs university cafeteria services. Because there is little evidence or literature on university dining services in Malaysia, to the best of our knowledge, I am interested to discover more about this topic. Quality management educates people to improve quality and increase productivity. Quality management allows you to learn what kind of improvement in product and service with the aim to become competitive. It includes eliminating the need for mass inspection as well as building quality into the product in the first place. This research is to identify the relationship between the application of quality management and university cafeteria business improvement. This research objective is to analyze significant relationship between the application of quality management and university cafeteria business improvement, to investigate the correlation between the variables used in the quality management application, and to determine how quality management is most commonly used for university cafeteria business improvement. Lastly, the researcher uses primary data by distributing the questionnaire to the respondents and secondary data obtained from the internet articles and journals as a research method for this project.

Keywords: Business Improvement, Quality Management, TQM, University Cafeteria.

ABSTRAK

Pengurusan kualiti memperkenalkan teknik yang digunakan untuk mengurangkan variasi proses dalam proses terkawal. Ini adalah salah satu pendekatan untuk faedah komuniti Universiti Teknikal Malaysia Melaka (UTeM) mendapat perkhidmatan terbaik dengan melaksanakan pengurusan kualiti menyeluruh yang menggunakan perkhidmatan kafeteria universiti. Oleh kerana terdapat sedikit bukti atau literatur mengenai perkhidmatan makan universiti di Malaysia, sepanjang pengetahuan kami, saya berminat untuk mengetahui lebih lanjut mengenai topik ini. Pengurusan kualiti mendidik orang ramai untuk meningkatkan kualiti dan meningkatkan produktiviti. Pengurusan kualiti membolehkan anda mempelajari jenis penambahbaikan dalam produk dan perkhidmatan dengan matlamat untuk menjadi berdaya saing. Ia termasuk menghapuskan keperluan untuk pemeriksaan besar-besaran serta membina kualiti ke dalam produk di tempat pertama. Penyelidikan ini adalah untuk mengenal pasti hubungan antara aplikasi pengurusan kualiti dengan peningkatan perniagaan kafeteria universiti. Objektif penyelidikan ini adalah untuk menyiasat tahap kepuasan dalam kalangan komuniti UTeM, had terbesar yang dihadapi dalam menerima pakai pengurusan kualiti, dan sifat-sifat yang paling terpilih dalam peningkatan perniagaan kafeteria universiti. Akhir sekali, pengkaji menggunakan data primer dengan mengedarkan borang soal selidik kepada responden dan data sekunder yang diperoleh daripada artikel dan jurnal internet sebagai kaedah kajian untuk projek ini.

Kata kunci: Peningkatan Perniagaan, Pengurusan Kualiti, TQM, Kafeteria Universiti.

Table of Contents

CHAPTER ONE

INTRODUCTION

1.0 Introduction

1.1 Background of study

Today, customers looking for the best quality of services at the lowest cost, and that places cafeterias under pressure to provide services that exceed customers' expectations in the highly competitive environment and the globalization age, thus Total Quality Management (TQM) became a top priority in many hospitality organizations to meet customers' search for better services and products (Al-Ababneh et al., 2018). As a result, many cafeterias have adopted TQM as a core management concept business excellence (Al-Ababneh et al., 2018).

Business failure occurs when customers feel dissatisfied with the service they received (Hsieh & Yeh, 2018). Business improvement requires service recovery as an effective response to customer complaints by taking prompt action to resolve these issues (Ogbeide et al., 2017). Business improvement is taken by service providers as a procedure of the corrective actions to regain customer satisfaction and minimize customers harm (Cheng et al., 2018; Hsieh & Yeh, 2018; Wong et al., 2016).

TQM's impact on the cafeteria industry's business improvement has received considerable research attention due to TQM practices having a positive impact on enhancing business performance (Al-Ababneh et al., 2018). TQM plays a vital role in achieving higher levels of business improvement (Khalfallah et al., 2021). Production personnel and quality management recognized quality management as part of the philosophy of TQM that empowered employees to improve their processes.

1.2 Quality Management

The concept of quality is often considered as conformity, the overall characteristics or characteristics of a product expected by the consumer (Prasetyawaty, 2014). A continuous improvement approach is required for quality. A company must not only fulfill the requirements of the quality, but also the requirement of safety, environment, and economy (Sarker, M.N.I., Hossin, M.A., Anusara, J., et al., 2018).

Quality management is a regularly applied process that is used to determine the source of changes in the organization as well as to analyze business capabilities. In many management implementations, a control chart has an important role in asses the "quality" of a product; either in control or out of control (Lestari, 2015). Quality management also monitors the ongoing production process, using graphical control charts, to present performance on a process, to detect and reduce variation in the outcome, improving quality (Vetter TR, Morrice D., 2019). Quality management is now a widely applied practices in control and improvement processes in manufacturing, but research on the successful application of quality management in the food processing industry has been published only recently (Lim et al. 2017).

From the mid-1980s onward, the TQM rules and the ISO 9000 series standards were introduced to production management. The growing importance of quality, in the food sector, makes the use of quality management practices a necessity. Several reviews of quality management in the food industry have been published lately (Lim, S.A.H.; Antony, J.; Arshed, N.; Albliwi, S.,2017). These reviews conclude that food companies implementing quality management have attained significant benefits in terms of reducing process variations, compliance with food regulations, productivity increase, boosting customer confidence and trust, and improving continuous process control and process improvement activities. Among the identified limitations, the following issues were the most significant: the lack of statistical thinking, the complexity of quality managements, and a large number of variables (Lim, S.A.H.; Antony, J., 2019).

1.3 University Cafeteria Business Improvement

University cafeterias, also called canteens, are places where students spend a considerable amount of time. Many staff members and students gather around not only at lunchtime but also throughout the day. University cafeterias and canteens do not only provide food services to students but also provide a place for leisure (Ha and Ha, 2008). In the past, the role of the university cafeteria was restricted to simply providing food to students and staff, but, because dining-out options for college students have increased in recent years, interest in student cafeterias today has expanded to include quality management (Cha and Seo, 2019).

Accordingly, today's college students are interested in much more than the availability and quality of food (Kwun et al., 2013). The increasingly diverse and expanded needs of students have had a major impact on the operation and management of university student cafeterias. At this point, analyzing the factors that affect students' perception of university cafeteria business improvement will be significant in establishing superior management strategies (Cha and Seo, 2019). As an example, Garg and Kumar's (2017) research, which they conducted at Taylor's University in Malaysia, found that food and beverage variety and quality, price and value fairness, and atmospherics and business improvement are among the student's selection attributes.

Research concerning the business improvement of higher education institutions was included. The goal was to develop an explicit framework for the higher education industry and provide a proper service for students (Chen, 2012). This study was based on the Servqual model and the Plan-Do-Check-Action (PDCA) cycle of total quality management (TQM) to establish a higher education quality management system (Chen, 2012). To improve reputation, providing various services helps establish a superior service base leading to competitive advantage (Jung, 2013). Therefore, universities are interested in improving the quality of such university facilities as a part of their policy to reinforce competitiveness (Cha and Seo, 2019).

1.4 Problem Statement

A competitive market environment requires enterprises from the food industry to emphasize quality aspects in improving the process, quality, and performance of the company. This goal is achievable by implementing a quality management practice program. Improvements in quality and productivity enable the country to produce a variety of high-yielding food products by adopting several new mechanisms such as the use of innovation, technology, and better quality management practices in the business (Abdullah and Rosli, 2015).

Although quality management is a widely utilized techniques in manufacturing, research on its successful implementation in the food processing industry has just recently been published (Lim et al. 2017). Among the highlighted shortcomings, the huge number of variables, the lack of organizational thinking, and the complexity of quality management practices were the most significant (Lim, S.A.H.; Antony, J., 2019). Saglik, Gulluce, Kaya, and Ozhan (2014) established that to survive in today's aggressive market, all food service operations must give importance to the quality of service offered to their customers since food service quality is viewed as a compelling variable in fulfilling students' expectations (Raman & Chinniah, 2011).

It is believed that business improvement has a positive effect on customer satisfaction, that is to say, bettering quality management results in a satisfied customer (Chang, Suki, & Nalini, 2014; Lee, Liaw, Lee, & Rha, 2016). Quality management can be studied as a phenomenon considered within the perspective of relating customers' expectations and perceptions regarding the provided service (Yılmaz 2008; Tan, Oriade, & Fallon, 2014). The food service administrators must improve the food and beverage menu with more rational prices. This will ensure that the staff and the students consume food and beverage from the university cafeteria, rather than buying food products from other and off-campus food service operations (Nadzirah et al, 2013).

1.5 Research Question

1. What is the significant relationship between the application of quality management and university cafeteria business improvement?

2. What is the correlation between the variables used in the quality management application?

3. How quality management is most commonly used for university cafeteria business improvement?

1.6 Research Objectives

1. To analyze significant relationship between the application of quality management and university cafeteria business improvement.

2. To investigate the correlation between the variables used in the quality management application.

3. To determine how quality management is most commonly used for university cafeteria business improvement.

1.7 Scope of Study

The study contains a few limitations that may have an impact on its results, either directly or indirectly.

To begin, data will only be collected from those who are active in the cafeteria operations, as well as business owners and customers. It is their willing participation in the quality management procedures that ensures the university cafeteria business advancement. Second, the Universiti Teknikal Malaysia Melaka (UTeM) Main Campus in Durian Tunggal university cafeteria was chosen as the research location. As a result, the data samples and analyses performed will not represent the entire population of UTeM, and the results cannot be used to make generalizations. Third, most of the respondents' quality management knowledge and skills, particularly their willingness to follow Standard Operating Procedures (SOP), may need to be tested. In keeping with this, the locations must also have internet lines that allow for the completion of the online questionnaire.

As a result of these difficulties, the study may have difficulty ensuring a smooth research procedure, which may cause delays in the timeline.

CHAPTER TWO

LITERATURE REVIEW

2.0 Literature Review

This study provides an overview of quality management and its conceptual frameworks. Worldwide food processing companies are always posing a threat to the food industry. A study further established the university cafeteria business transformation and quality to meet the new challenge and survive in the market. The goal of this study is to look at how quality managements are used in this industry's production settings and to look for evidence of Total Quality Management (TQM) to assess its competitiveness. Indeed, many businesses have realized the link between quality and profits. It is now, more than ever, critical to design a quality plan based on TQM concepts.

TQM is used to raise performance and system quality in an organization's processes. The type of meal offered and the consumer's culinary preferences, impact cafeteria quality. Customers are becoming more conscious of the influence of high-quality food on their health, society, and the environment (Riccioli, F.; Moruzzo, R.; Zhang, Z.; Zhao, J.; Tang, Y.; Tinacci, L.; Boncinelli, F.; De Martino, D.; Guidi, A., 2020) As a result, this research divides cafeteria quality into six categories: cafeteria safety management, employee hygiene management, cafeteria service, food quality, environmental atmosphere, and corporate social responsibility.

The literature study explains the foundation for the situations that occur in the food processing industry, particularly in the university cafeteria, with a focus on areas of quality management development, such as quality control, as well as total quality management. Furthermore, the usage of quality management approaches, which are often employed in quality systems, is discussed. The study covers several critical subjects related to the execution of quality management operations in the food industry to increase company business performance.

2.1 Introduction

Institutional food services are currently accessible in Malaysia in a range of locations, including university dining halls. In general, there is little evidence or literature on university dining businesses in Malaysia, to the best of our knowledge. As the number of students on campus grows, interest in institutional food businesses, particularly university cafeteria, has grown steadily in Malaysia. Institutional food business, especially in universities, is currently exploding as the student population in Malaysia's public and private universities grows. As a result, universities and other higher education institutions must provide the best university cafeteria businesses to their employees and students.

University cafeteria business improvement can be studied as a phenomenon considered within the perspective of relating customers' expectations and perceptions regarding the provided service (Yılmaz 2008; Tan, Oriade, & Fallon, 2014). Similarly, Garg (2014) felt that business improvement can inspire customer opinion towards a restaurant. Buyer expectations and perceptions of service can influence business improvement. Tan, Oriade, and Fallon (2014) likewise specified that this intangible element was one of the vital components in business improvement. It's difficult and complicated to measure business improvement. Because services are intangible, they must be measured. Employee performance, could be one of the intangible aspects.

The application of several approaches to control a process or production system is known as quality management. Quality management practices and methods can aid in the monitoring of process behavior, and the resolution of production problems. The major goal of using quality management methods is to detect and prevent product problem. According to a literature review, quality management is particularly effective for improving quality since it allows the company to discover irregularities in processes. Using quality management as an approach, the researcher will highlight some of the factors that can help university cafeteria increase their efficiency toward continuous improvement.

2.2 The Management Process

Japanese automotive company, Toyota, founded the management process or Toyota Production System (TPS), now been adopted by most the countries across the world due to its proven advantages in quality improvement, cost reduction, flexibility, and quick response (K. Mohan Sharma, S. Lata, 2018). The management process can be best defined as waste disposal in a production system that might be related to human efforts, and time inventory at various stages of production (N.A.A. Rahman, S.M. Sharif, M.M. Esa, 2013). The management process is an effective and popular tool in most of the manufacturing and service sector to tackle non-valued activities and wastes (N. Nandakumar, P.G. Saleeshya, P. Harikumar, 2020). Any sort of wastage, in the true sense the activity that doesn't add any value to the end product, has to be reduced or if possible, eliminated to lower the cost of production (M. Gbededo,2018). The main theme behind the management process is to reform the existing manufacturing methods and processes by reducing waste to excel towards cost reduction, increase quality, increase profit, and maximize customer value (S. Nallusamy, 2020).

But challenges ahead of them are neck-to-neck competition, unpredictable economic environment, and scarcity of resources (] C. Veres (Harea), L. Marian, S. Monica, K. Al-Akel, 2018). It is a business strategy tool used by the company to stay ahead of the competitors by adding value to the product and enhancing productivity maintaining a healthy competitive environment (J.M. Rohani, S.M. Zahraee, 2015). The tools of management process were developed for maximizing capacity utilization, reduction in cycle time, lead time, and inventory, and enhancing the product value (R. Sundar, A.N. Balaji, R.M.S. Kumar, 2014). Management process tools are effective wherever there is a selection of correct tools, Genuity in collected data, involvement of people around with a positive mindset, to bring out and accept the change in their working method or culture that will lead to a better working environment (S. Kolla, M. Minufekr, P. Plapper, 2019).

2.2.1 Kanban

A signaling card method to supply the parts only when required (N.A.A. Rahman, S.M. Sharif, M.M. Esa, 2013). The Kanban system is based on a client of a party requesting that part from its supplier. The part's customer can be an actual consumer of a finished product or the production staff at the next station in a manufacturing plant. Kanban has a goal of minimum inventory at any time under the philosophy that material will not be produced or moved until a customer sends the signal to do so (N. A. A. Rahman, S. M. Sharif, and M. M. Esa, 2013).

2.2.2 Just in Time (JIT)

Just in time are a popular inventory model and a common lean principle that is used in the supply chain to make sure that it is provided to produce the right amount of products at the right time and satisfy quality requirements (S. Wang and B. Ye, 2018).

And it consists of supplying of right and proper materials for the system (N. H. A. Halim, A. Jaffar, N. Yusoff, and A. N. Adnan, 2012). The benefits of JIT can be stated as an increase in productivity, improvement in the quality process, and reduction in waste and reworks, which increases production quality (J. L. G. Alcaraz, A. A. Maldonado, A. A. I. G. C. Robles, and G. A. Herna´ndez, 2014).

2.2.3 Kaizen

Kaizen is a Japanese word that has the meaning of ‘continuous improvement’ and it is a set of practices that are focused on continuous quality improvement (B. Durakovic and H. Basic, 2013). Kaizen is the practice of analyzing a problem and implementing a solution with ongoing, real-time reassessment. When performed properly, kaizen not only eliminates unnecessary work but teaches people a systematic, scientific method for identifying and eliminating waste in a process (M. P. Knechtges and M. M. C. Decker, 2014).

2.3 The Statistical Process

The control chart invented by Walter Shewhart in the early 1920s is a basic tool for statistical process control (SPC) and plays an important role in the quality control of various production processes. The control chart is used to record and monitor the volatility of some key quality characteristics (De la Torre Gutierrez Hector, Pham DT, 2016). Control charts have long been used for quality monitoring in the manufacturing process (Hadian, H.; Rahimifard, A., 2019) To avoid variations in the process, there is a need to use control charts to keep the process under control (A. Zaka, A. S. Akhter and R. Jabeen, 2020).

Statistical process control (SPC) methods have the potential to complement traditional feedback by facilitating data interpretation and improving reaction times (Baker AW, Haridy S, Salem J, et al., 2018). By combining time series, and statistical and graphical analysis of data in near real-time, control charts help determine whether data exhibit natural (eg, within probabilistic thresholds) versus unnatural (eg, statistically significant increase or decrease) variation. The control limits are one of the most critical issues for a robust control chart. The control limits are regarded as trial control limits (DC Montgomery, 2012).

Based on the type of monitored quality characteristics, there are two kinds of control charts: variable (interval or ratio) and attribute (category) (Montgomery, 2009). On the other hand, if the quality characteristics are not measured on a numerical scale (in categorical form) such as color and softness, an attribute control chart can be employed (Sorooshian, 2013). The control chart also developed for the multivariate case where each character cannot be monitored separately. Therefore, multiple quality characteristics should be monitored together using a multivariate control chart.

2.3.1 X Bar R Control Charts

The X Bar R control chart is contained more information about the process data than the attribute control chart such as the np-control chart. S. Senturk and N. Erginel (2009) pointed out that the control charts are applied to monitor the variation in the process. M. K. Hart, K. Y. Lee, R. F. Hart, and J. W. Robertson (2003) discussed the applications of the control charts in the industry. D. Bai and K. Lee (2002) proposed the variable X Bar R control chart. D. He, A. Grigoryan, and M. Sigh (2002) proposed the variable control chart using efficient sampling schemes. L. L. Ho and R. C. Quinino (2013) designed the control chart for monitoring the variability in the process. More details on the applications of the control charts can be read in (P. Pereira, J. Seghatchian, B. Caldeira, S. Xavier, and G. de Sousa, 2018). Recently, Aslam and Khan designed the neutrosophic version of the X Bar R chart for monitoring the indeterminate mean parameter of the process (M. Aslam and N. Khan, 2019).

2.3.2 p Control Chart

The p chart is based on the the simplest statistical measure namely propotion (p). This chart is generally suggested for observing the process variability (M. Riaz, R. Mehmood, N. Abbas, and S. A. Abbasi, 2016). Because it loses efficiency for smaller sample sizes and wastes data information in its calculation, the p chart is inferior.

2.3.3 np Control Chart

np chart is rooted in a relatively good measure of variability called the mean number of successes (np). This graph is commonly recommended for observing process variability (M. Riaz, R. Mehmood, N. Abbas, and S. A. Abbasi, 2016). The underlying statistic of the np control chart is not a robust measure of variability and becomes greatly influenced by the existence of outliers in data (S.-F. Yang and B. C. Arnold, 2016).

2.4 The Decision Making Process

Many quality management approaches have been implemented by corporations all around the world. Decision making focuses on the critical quality characteristics which are relevant to customers (Garza-Reyes, 2015). There are two key methods used in decision making namely, DMAIC (Knowles et al., 2005; Yousefi and Hadi-Vencheh, 2016) and DFSS [Kwak and Anbari, 2006, as cited in (Siddiqui et al., 2016)]. DMAIC methodology (Garza-Reyes, 2015), closely resembles Dr. Edward Deming's continuous learning model, PDCA [Deming, 2000, as cited in (Garza-Reyes, 2015)].

Caterer focused on three management methods for the university cafeteria: the Pareto Chart, Fishbone Diagram, and Why Analysis. Define, Measure, Analyze, Improve, and Control is referred to as DMAIC. DMAIC is for currently used processes (Erdogan and Canatan, 2015). According to Erdogan and Canatan (2015), DMAIC is employed when the current processes don't meet the desired level of quality. In order to achieve major improvements, the Pareto Chart, Fishbone Diagram, and Why Analysis are most frequently utilized.

2.4.1 Pareto Chart

Vilfredo Pareto (1848-1923), found a significant disparity in wealth distribution. J. M. Juran discovered that the "vital few and the trivial many" phenomenon related to many aspects of statistical process control (SPC). To describe this occurrence, he is credited with coining the names "Pareto chart" and "Pareto analysis." The tendency for the majority of issues to be caused by a few of the probable causes is referred to as Pareto analysis. Obtain the biggest boost in efficiency and effectiveness by isolating and fixing the primary issue areas. The Pareto chart is a graphic representation of the Pareto principle that uses a bar graph with bars organized in decreasing magnitude to emphasize the principle.

2.4.2 Fishbone Diagram

Cause and Effect Diagram, Herringbone Diagram, and Ishikawa Diagram are all terms for the same thing. This tool is used to graphically represent the factors that influence the problem along with brainstorming sessions to reach the root cause of the identified problem (S. Nallusamy, 2020). When there is a persistent issue or problem, it is critical to investigate all possible causes before attempting to find a solution. In that manner, the issue will be entirely resolved. Cause and Effect Analysis is a good technique to go about it. This diagram-based strategy, which combines brainstorming with a form of mind map, encourages one to think about all of the possible causes and reasons for a problem, not just the most obvious ones.

2.2.3 Why Analysis

It is a style of questioning that leads to the discovery of a problem's root causes. A why-why is used to identify solutions to a problem that address the problem's fundamental causes, rather than merely band-aid fixes. It also aids in determining how to truly prevent the issue from occurring again.

2.5 Customer Satisfaction

The primary goal of any consumer, including individuals and institutions, is to obtain the required good or service at the greatest possible price and under the best possible terms. To keep up, suppliers must demonstrate more agility and continue to improve their capacity to understand and meet their customers' needs. Because the supply chain includes the end-user, the supplier, and multiple customers who, in turn, become suppliers for other chain constituents, there is a need for effective communication among them (Alexandra-Ioana Marian and Elena Ilinca Magdalena Soare, 2020).

2.6 Leadership's Commitment

Apart from establishing a quality management system, senior management must recognize the importance of quality and innovation, as well as devise plans to improve the quality of the goods and services delivered. The top-level manager must lead and support those who contribute to the achievement of performance goals, clearly defining the roles and duties of each team, and efficiently allocating resources. Furthermore, it must ensure that all parties involved both upstream and downstream are committed to fulfilling the requirements and demonstrating their commitment to the continual improvement of a quality management system (Alexandra-Ioana Marian and Elena Ilinca Magdalena Soare, 2020).

2.7 Retain customers

What could be better than gaining one new customer? Retaining an existing customer is the answer. Businesses use customer retention as a metric to track customer loyalty over time and assess overall success. Businesses use a variety of strategies to improve customer experiences and increase customer retention by lowering the number of consumers that leave the company in a given time frame.

2.8 Word of Mouth

Word-of-mouth, often known as "WOM marketing," is a strategy used when a consumer expresses interest in a brand's goods or services through casual conversations. Essentially, it is free promotion brought on by consumer experiences that are typically above and beyond their expectations. Through various publicity initiatives put up by businesses or by providing possibilities to promote consumer-to-consumer and consumer-to-marketer communications, word-of-mouth marketing can be promoted. Buzz, viral, blog, emotive, and social media marketing are all examples of WOM marketing, which is also known as "word-of-mouth advertising."

2.9 Viral on Social Media

Viral marketing on social media is when a piece of content actually takes off on social media and rapidly expands its audience through an unusually high number of shares and exposures; this phenomenon is known as "going viral." For marketers, discovering what causes a video to go viral in the first place is like finding the holy grail. However, it all comes down to basic psychology. Emotion and social connection are major themes throughout. The top three reasons people share things online are to entertain and appreciate others, to better define ourselves, and to strengthen relationships.

2.10 Theoretical Framework

Theoretical frameworks are highly valued by researchers. Despite this, the information systems field has largely disregarded the production of new theories and the improvement of old theories (Weber, 2012). The researcher's and other academics' knowledge within the theory's domain is thought to be enhanced by a high-quality theory. It may also help practitioners improve their ability to work effectively and efficiently within the theoretical framework (Weber, 2012). The theoretical framework suggested in this research falls within a theory's focal phenomena that have not been addressed by Weber's previous theories (2012). Theories are a representation of someone's opinion on how to characterize a subset of real-world phenomena (Weber, 2012).

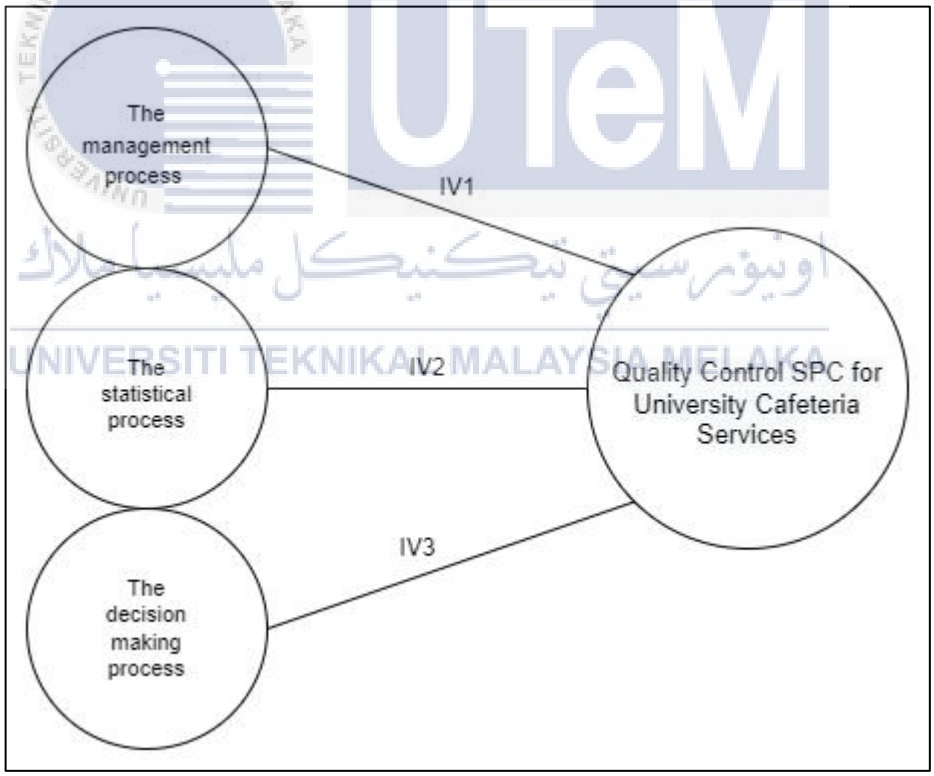

Figure 1: Theoretical Framework

2.11 Hypothesis of The Study

Variable 1: The management process

H0 : There is a significant relationship between management process and business improvement.

H1 : There is no significant relationship between management process and business improvement.

Variable 2 : The statistical process

H0: There is a significant relationship between statistical process and business improvement.

H1: There is no significant relationship between statistical process and business improvement.

Variable 3 : The decision making process

H0: There is a significant relationship between the decision-making process and business improvement.

H1: There is no significant relationship between the decision-making process and business improvement.

CHAPTER 3

RESEARCH METHODOLOGY

3.0 Introduction

The term "research" refers to a search for information. Research can also be defined as a scientific and methodical search for relevant information on a given topic. In reality, research is a form of scientific inquiry (JK Nayak, P Singh, 2021). "A meticulous investigation or inquiry, especially through search for new facts in any discipline of study," according to the Advanced Learner's Dictionary of Current English. Research is a unique contribution to the body of knowledge that contributes to its growth. It is the search for truth by research, observation, comparison, and experimentation. In a nutshell, research is the pursuit of information through an objective and systematic approach to locating a solution to a problem. Research is also the systematic approach to generalization and the construction of a theory. As a result, the term "research" refers to a systematic method that includes stating the problem, formulating a hypothesis, collecting facts or data, analyzing the facts, and arriving at certain conclusions, either in the form of solutions to the problem at hand or in the form of generalizations for some theoretical formulation. If the research contributes to a body of knowledge and follows the scientific process, it is considered "scientific research."

3.1 Research Design

A research design is a method used by a researcher to answer questions in a legitimate, objective, accurate, and cost-effective manner. A research design is the arrangement of conditions for the collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in the procedure (Ranjit Kumar, 2011). A research design is used to decide and communicate to others about what study design to employ, how the information will be collected from respondents, how respondents will be selected, how the information collected will be processed, and how the findings will be communicated (Kumar, 2019). In addition, the logic and justification for each decision in the study design impact the responses to the 'how' of the research journey (William et al., 2017). In addition to providing the rationale and argument required to support them critically from the literature evaluated, researchers must also reassure others that the path recommended would produce accurate and dependable findings.

3.1.1 Descriptive Research

The phrase descriptive research is widely accepted among research methodologists. Descriptive research is described as a research method that aims to accurately characterize existent occurrences. The term "existing phenomena" distinguishes descriptive research from experimental research, which looks at both existing and new phenomena after a time of treatment. The phenomena discovered through descriptive study have already been documented. A researcher's job is to collect data using research instruments such as tests, questionnaires, interviews, and even observation. The primary purpose of descriptive research is to characterize existing phenomena in a systematic manner (Haryanto Atmowardoyo, 2018).

Surveys, correlation studies, qualitative studies, and content analysis are examples of descriptive research methodologies. These sub-types differ not in terms of data availability but terms of data collecting and analysis processes. As a result, descriptive research may include a quantity or quality analysis. A survey, for example, is typically used to gather information from a wide group of people about a specific event or topic. Questionnaire administration is a popular method of data collecting, and data processing requires quantification. Because the goal of a correlation study is to determine the coefficient correlation index between two variables, it also requires quantitative data analysis. Quantity or quality data analysis may be used in content analysis. The other three, qualitative research, ethnography, and life history are more likely to require quality data analysis.

The association between the application of quality management for university cafeteria business improvement is investigated in this research study using quantitative and qualitative data. This study employs a variety of methods, including surveys, correlation studies, qualitative studies, and content analysis.

3.2 Methodological Choices

The purpose of this study was to look into the application of quality management for university cafeteria business improvement. A quantitative research strategy was used, based on positivist ontologies (Burns, 2000). The study hypotheses were tested using simple linear regression and multivariate analysis. The findings of multivariate regression were supplied for further discussion about the aggregate relationship between variables. The following concept covers the requirements for a predictive QM system in low-volume discrete systems.

Predictive QM entails switching from a reactive to a proactive approach to process control. This necessitates shifting the focus of evaluation from statistical samples to every unit produced, especially in low-volume discrete manufacturing systems. During quality control, the scope of analysis shifts from examining single variables independently to numerous variables as a whole. Not only does this impact the analysis of commodities generated, but it also changes the interventions in cases of tolerance breaches. Different types of errors are linked to different types of intervention costs. For an entire unit to pass specifications, predictive QM techniques determine which control variable needs to be changed closer to the nominal. Prediction insecurities can be computed against intervention cost factors when all intervention cost factors have been determined, allowing the cost-optimal corrective intervention for each unit to be determined.

Aside from process control in assembly, Bayesian multi-variable correlations-based predictive QM systems give input for other stages of the product life cycle (Thomas Gittlera, Eduard Releaa, Donatella Cortib, Giorgio Coranib, Lukas Weissa, Daniele Cannizzaroc, Konrad Wegenera, 2018). After-Sales Service: Using the relationships determined during production, fewer diagnostic measurements are required in the field to determine errors. Similarly, recognized faults can be linked to the component with the highest influence or the lowest intervention cost element, resulting in a Decision Support System (DSS).

3.3 Data Collection

It is hard to think about research without mentioning data collection methods and the data that arises from them. One of the strengths of grounded theory studies and qualitative research, in general, is the variety of data sources (Corbin and Straus, 2015). Data can be acquired from a variety of sources utilizing two modes of inquiry: qualitative and quantitative research (Mkandawire, Sitwe Benson, 2019). Data collection can be made in a variety of places, including online forums and platforms, as well as social media sites. Data collection varies in structure and content depending on the data source, but they typically include information on customer profiles, total ratings, review content, and review dates. While overall ratings are a basic measure that can be used to assess service quality and identify customer complaints (Z. Xiang, Z. Schwartz, J.H. Gerdes Jr, M. Uysal, 2015), the review text data contains significant and detailed (sentiment) information about customer happiness and concerns. Moreover, the ratings are found to be unreliable in many cases, as customers may not be serious about their ratings or are simply not familiar with the related field (Pan, W., Xiang, E. W., and Yang, Q., 2012).

While ratings may only provide abstract information about service quality, which is insufficient to identify problematic service dimensions (i.e. "features"), the textual content of customer reviews addresses the ambiguity of ratings by providing explanations and detailing the context for the ratings. As a result, the use of review text data can supplement (or occasionally even replace) the use of faulty rating scores. For these reasons, this study uses review content and dates to track consumer complaints about time. Because our suggested method can automatically detect customer complaints "at the service feature level," we believe it will be an effective complement to the use of rating scores to monitor service quality. Customer reviews are collected and turned into a structured database once the focus service has been chosen. The structured elements (for example, review dates) are semantically and formative consistent, but the unstructured items (for example, review content) are textual and may have different structures or styles.

3.3.1 Primary Data

Primary data is information gathered directly from primary sources by researchers using methods such as interviews, questionnaires, and experiments. Primary data is usually acquired directly from the source or the place where the data came from and is considered the greatest type of data in research. Primary data sources are typically chosen and adjusted to fulfill the objectives or requirements of a certain research project. Before deciding on a data collection source, it is also necessary to figure out what the research's goal is and who the target population is (Driscoll & Brizee, 2017).

One of the key sources of data is a questionnaire, which is an observational technique that consists of a sequence of items delivered to a respondent in a written form, to which the participant is supposed to respond in writing. Respondents are given a list of written things to which they must respond by ticking the ones that they believe are acceptable. To collect the quantitative data and test the research hypotheses, a Web-based survey was adopted. Of various modes of survey data collection (e.g. postal email postal mail, telephone, face-to-face survey), this method was chosen for two main reasons: to enable the collection of data efficiently and cost-effectively and, more importantly, to maximize the response rate (Griffis et al., 2003).

In line with De Vaus' (2002) recommendations, the elaboration and refinement phase of questionnaire design involved a three-stage pre-test analysis. The outcomes of the analysis led to some changes in the layout and content of the final draft of a survey questionnaire. The final version of the Web-based self-completion questionnaire adopted a seven-point Likert scale (Likert, 1932). The final version of the questionnaire survey was composed of the following four main sections: invitation, introduction, question types, and close.

3.3.2 Secondary Data

The feasibility of employing current data for the study is becoming more widespread at a time when large amounts of data are being collected and archived by researchers all over the world (Andrews, Higgins, Andrews, Lalor, 2012; Schutt, 2011; Smith, 2008; Smith et al., 2011). Secondary data analysis is the examination of information gathered by someone else for a primary reason. For researchers with limited time and resources, using existing data is a viable choice. Secondary analysis is an empirical activity that follows the same basic research principles as studies that use primary data and follows the same stages as any other research approach.

The term "secondary sources" refers to information gathered by someone else. Secondary data are information gathered by a third party who is unrelated to the research project and who gathered the information for a different reason and at a different time in the past. These data become secondary data for current users if the researcher uses them. Secondary data can be found in government publications, books, journal papers, and internal documents.

This study consists of a systematic review of the literature (Cook et al., 1997; Cooper, 1998; Tranfield et al., 2003), which is quite an innovative method in the social sciences (i.e. Tranfield et al., 2003; Denyer and Neely, 2004; Coombes and Nicholson, 2013; Sandberg and Aarikka-Stenroos, 2014) and not frequently used in TQM studies. A systematic review, according to Staples and Niazi (2007), is a strategy for identifying, assessing, and analyzing contributions already published to explore a specific research subject, making it "transparent and reproducible." This method is particularly well adapted to studying the "what" and "how" concerns in literature reviews (Abatecola et al., 2013, p. 1076) as well as identifying opportunities for future research, which is the primary purpose of the current publication, after classifying the studies that address these issues.

3.4 Research Location

The Main Campus university cafeteria in Durian Tunggal of Universiti Teknikal Malaysia Melaka (UTeM) was chosen as the research location. UTeM is a Malaysian public university located in Durian Tunggal. It was founded on December 1, 2000, as Malaysia's first technical public university and the 14th overall public university. It is credited with being the first in Malaysia to employ the "Practice and Application Oriented" teaching and learning style for tertiary technical education.

Two learning centers, UTeM Main Campus in Durian Tunggal and UTeM Technology Campus in Ayer Keroh, support the university's eight faculties. Because only the UTeM Main Campus at Durian Tunggal university cafeteria was chosen as the research location, the data samples and analyses done will not represent the full UTeM population. As a result, generalizations cannot be drawn from the findings.

3.5 Time Horizon

In future studies, time horizons usually relate to study periods or a chronological horizon of different breadth. According to Kosow and Gaßner (2008), there are three fundamental temporal horizons: short-term, medium-term, and long-term. As an alternative time horizon, Kosow and Gaßner (2008) distinguish static observations from a point in time in the future, which is frequently connected with normative tactics.

Because the research will not last more than ten years, this study will adopt a short-term temporal horizon. Cross-sectional and longitudinal observations are the two forms of temporal horizon observations. Cross-sectional data is used when all observations are made at the same time, as in most surveys. Longitudinal data, on the other hand, is a collection of observations for a single variable that spans several years, quarters, months, or days.

3.6 Sampling Design

Sampling design is a mathematical function that calculates the likelihood of drawing any given sample. Because sampling is the cornerstone of practically every research project, a one- or two-semester course in sampling design is a necessary aspect of statistics. It entails not only understanding how to derive the probability functions that define a given sampling method, but also how to construct the best-fit sampling method for a given case (Mohadjer, Krenzke, & Van de Kerckhove, 2018). The design of a sampling strategy might be either simple or highly complex. Each unit has the probability in the simplest, one-stage sample design, where there is no explicit stratification and a member of the population is picked at random. Each of these has its function for sampling design. The sampling strategy chosen will be determined by the researcher's situation and priorities. Non-probability sampling approaches, such as convenience sampling, where the sample is just individuals who can be reached and observed, are sometimes used. These methods of sampling, unlike systematic, stratified, or cluster sampling, cannot be effectively characterized by a function.

3.6.1 Sampling Technique

In research, sampling strategies are quite useful. It is one of the most essential aspects in determining how accurate the research or survey results are. If there is a problem with the sample, it will be indicated in the final result. Depending on the requirement and situation, the researcher might use a variety of approaches to collect samples. For this study, the researcher picked a systematic sample, which is a simple random form of design. A basic random sampling technique, according to Thomas (2020), is a randomly picked subset of a population. A population's members are enumerated in order, and samples are taken at predetermined intervals. This method is ideal for this study since it concentrates on a single position and gives everyone an equal chance of being a respondent. The researchers concentrated on the staff and customers of the UTeM Main Campus cafeteria in Durian Tunggal.

3.6.2 Sampling Size

In any statistical scenario, such as a scientific experiment or a public opinion survey, the sample size is a count of individual samples or observations. Choosing a sample size is a crucial decision for any project while being a simple notion. A small sample gives erroneous results, while a big sample necessitates a significant amount of effort and money. The number of individual samples or observations utilized in a survey or experiment is referred to as sample size. The variable "n" is used to represent the sample size in statistics (Jon Zamboni, 2018).

For this study, the researcher will choose respondents from among the university cafeteria staff and customers. The researcher chose the UTeM Main Campus cafeteria in Durian Tunggal because she eats there frequently. This is to ensure that the application of quality management in university cafeteria business improvement is successful. There are 11143 undergraduate students and 854 staff members, according to the UTeM's official website. The population is a complete collection of elements, which are people or things who share some traits established by the sampling criteria used by the researchers. The sample size for this study is 373 participants, based on the population size.

Table 1 : Kejcie and Morgan Table

N	*S*	*N*	*S*	*N*	*S*
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970

3.7 Pilot Test

Pilot testing is a sort of software testing that verifies a system component or the full system in a real-time working environment. The Pilot Test is used to assess a research project's feasibility, time, cost, risk, and performance. This testing is carried out between the User Acceptance Testing (UAT) and Production environments. Pilot testing allows a small sample of end-users to try out the system in question and provide feedback before it is fully deployed. In other words, it refers to a practice run for the usability test that will follow. Pilot testing aids in the early detection of system flaws (Thomas Hamilton, 2022). Acceptance testing is sometimes included in this procedure as part of Compatibility Testing. When a new system is being designed to replace an existing one, this happens.

Installing a system on a customer site (or a user simulated environment) for testing against continuous and regular use is known as pilot testing. The most typical way of testing is to run the system constantly to identify any flaws. These flaws are then reported to the development team as bug reports, and the faults are addressed in the next system build. In this study, the researcher gives the questionnaire to ten students to see how reliable the questions are. The goal of sending this questionnaire to a small group of people is to collect comments, reduce errors, and increase the questionnaire content until the questionnaires are revised. The researcher can use this strategy to evaluate if the questionnaire has any flaws and fix them before releasing it to more respondents.

3.8 Questionnaire Design

A questionnaire is a set of questions or items intended to collect information about respondents' attitudes, experiences, or opinions. Questionnaires are useful for gathering quantitative and qualitative data. In market research, as well as the social and health sciences, questionnaires are frequently utilized. For example, a corporation can seek comments on a recent customer service experience, or psychologists might use surveys to explore people's perceptions of health risks (Pritha Bhandari, 2022)

The data was collected using three different types of questionnaires in this study. Open-ended questions are the first. As the name implies, the respondent has more flexibility in answering these questions. Instead of being presented with a list of options, the respondent is free to write as much or as little as they wish. This is ideal for qualitative data collection in exploratory questions. Multiple-choice questions come next. This question gives the respondent a list of possible answers from which they can choose one or more. Providing incomplete answer alternatives is a problem with multiple-choice questions. Finally, there are scaled questions. A well-thought-out questionnaire can mean the difference between success and failure. In questionnaires, scaled questions are widespread and are frequently used to assess the intensity of sentiment. Because there are many various types of scaled questions, such as Rating scales, Likert scales, and Semantic differential scales, this can be utilized in both exploratory and standardized questionnaires.

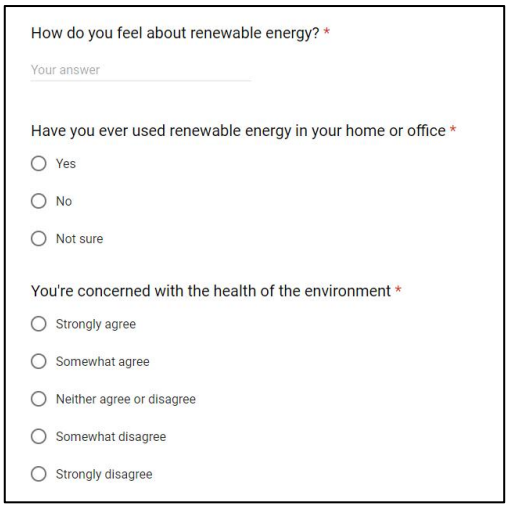

Figure 2 : Three types of questionnaire

3.9 Data Analysis

The process of collecting, modeling, and analyzing data to derive insights that aid decision-making is known as data analysis. Depending on the business and the goal of the research, there are a variety of methodologies and procedures for conducting analysis. All of these strategies are based on two main areas of study: quantitative and qualitative research (Bernardita Calzon, 2022). Gaining a deeper understanding of diverse quantitative research methodologies and approaches, as well as qualitative insights, will help the researcher focus on analysis efforts.

3.9.1 Descriptive Analysis

There are various ways to make sense of data. The approach decided depends on the questions asked and the information looked to gain from the dataset. I wanted to describe what has happened and why, and descriptive and diagnostic analytics will come in handy. If the queries pertain more to what could happen in the future, the researcher will want to utilize predictive and prescriptive analytics (Carmen Wolvius, 2020).

3.9.2 Reliability Analysis

The phrase dependability in statistics relates to a measure's consistency. Are the results of different measurements of intelligence, knowledge, productivity, efficiency, and so on in persons consistent? Researchers choose a test with high reliability because it delivers consistent measurements across time, implying that the test's results can be believed (Zach, 2021). The degree to which measures are reproducible whether performed by different people on different occasions, under different situations and apparently with different devices that measure the construct or skill is referred to as reliability (Drost, 2011). Researchers can employ test-retest reliability, split-half reliability, inter-rater reliability, or internal consistency reliability in this situation.

3.9.3 Pearson Correlation Analysis

The Pearson coefficient is a form of correlation coefficient that shows how two variables measured on the same interval or ratio scale are related. The Pearson coefficient is a metric for determining the strength of a relationship between two continuous variables (Will Kenton, 2021). The two variables are plotted on a scatter plot to get the Pearson coefficient, commonly known as the Pearson correlation coefficient or the Pearson product-moment correlation coefficient.

The Pearson coefficient is a mathematical correlation coefficient that depicts the link between two variables (X and Y). Pearson coefficients range from +1 to -1, with +1 denoting a positive association, -1 denoting a negative relationship, and 0 denoting no relationship at all. Correlation, not causation, is demonstrated by the Pearson coefficient. Karl Pearson, an English mathematician, and statistician are credited with inventing many statistical procedures, including the Pearson coefficient, chi-squared test, p-value, and linear regression.

3.9.4 Multiple Regression Analysis

Multiple regression is a statistical method for examining the relationship between numerous independent variables and a single dependent variable. The goal of multiple regression analysis is to predict the value of a single dependent variable by using known independent variables. Each predictor value is weighed, with the weights indicating how much of an impact it has on the overall forecast.

When one of the variables is dependent on a set of other factors, this approach can be used to analyze multivariate time series data. We can use the set of independent variables to simulate the dependent variable Y. We can predict the value of Y from the equation at any time when we have the values of the independent variables.

3.10 Summary

It is clear from the preceding explanation that research methodology is essential while conducting research. According to the requirements, the research technique assists researchers with the research flow from observations, surveys, questionnaires, case studies, and interviews. Research methodology act as a guide for researchers as they decide on the appropriate strategy for conducting their research. Because they have undergone numerous statistical procedures, every data is freely accessible and pure. Secondary data sources, such as government documents, websites, books, journal articles, and internal records, are quite useful when conducting a literature study.

CHAPTER 4

RESULT AND DISCUSSION

4.0 Introduction

To complete this research, it is essential to look into the hypotheses, respond to the study objectives, and interpret the data that was acquired. The results were highly important in confirming the accuracy of a study theory. The data analysis and the findings of the data that the researcher distributed were discussed. Respondents have addressed questions that remain unanswered. To answer the research questions, the Social Science Statistical Package (SPSS) version 26 was used to evaluate the data collected from respondents and carry out the study objectives. The information research that was presented in the next sentence examined and thoroughly detailed the data from the surveys.

The researcher reviews the research's findings in this chapter. 373 questionnaires were given out to the target respondent in order to collect data about the application of quality management for university cafeteria business improvement, but only 125 participants completed the survey. With pilot testing, this review took almost a month to properly finish. The objective of distributing this questionnaire is to support the researcher in analyzing whether the independent and dependent variables are meaningfully related. This questionnaire is divided into three sections: A demographic profile, B sets of questions about individual variables, and C a line of questions about dependent variables.

The researcher conducted a pilot test with 30 participants prior to actually gathering the entire data set. The results from the pilot test and the entire data set were investigated systematically using the Statistical Software Package for Social Science (SPSS). With the assistance of this software, researchers can assess and quantify data, create tables, examine intricate statistics, and identify trends in distributions, descriptive statistics, and tabular reports. John Noels (2018) states that SPSS is capable of storing and organizing the supplied data before arranging the data set to generate the desired output. It is capable of processing a broad range of dynamic data sets.

4.1 Respondents Profile Information

In Section A of the survey, there were a few demographic variables that would be evaluated using descriptive analysis. In this section, basic data on the individuals who answered the survey questions is provided. There were 373 total questionnaires given, 125 of which were valid, finished, and submitted to the researcher. The target respondents were questioned about their education level, occupation, how frequently they typically visited the university cafeteria, whether they had ever heard of quality management, where they first learned about it, and whether they had ever seen or experienced quality management at the UTeM on-campus cafeteria.

Table 2 presents the descriptive data for the current study's respondents. The dataset comprised questions about education level, occupation, how frequently they generally visited the university cafeteria, whether they had ever heard of quality management, where they first learned about it, and whether they had ever seen or experienced quality management at the UTeM on-campus cafeteria.

Table 2: Demographic Profile of the Sample

(Source from SPSS output)

Items		Frequency	Percent (%)
Education Level	SPM	14	11.2
	STPM	13	10.4
	Diploma	24	19.2
	Degree	68	54.4
	Other	6	4.8
	Total	**125**	**100.0**
Occupation	Student	82	65.6
	Self-employed	7	5.6
	Work at private sector	22	17.6
	Work at public sector	14	11.2
	Total	**125**	**100.0**

There were 14 (11.2%) respondents with an SPM, 13 (10.4%) with a STPM, 24 (19.2%) with a diploma, 68 (54.4%) with a degree, and 6 (4.8%) with other qualifications. The majority of respondents, 82 (65.6%), are students, while the remaining 7 (5.6%) are self-employed, 22 (17.6%) work in the private sector, and 14 (11.2%) work in the public sector.

4.2 Descriptive Analysis

4.2.1 How frequently did you generally visit the university cafeteria

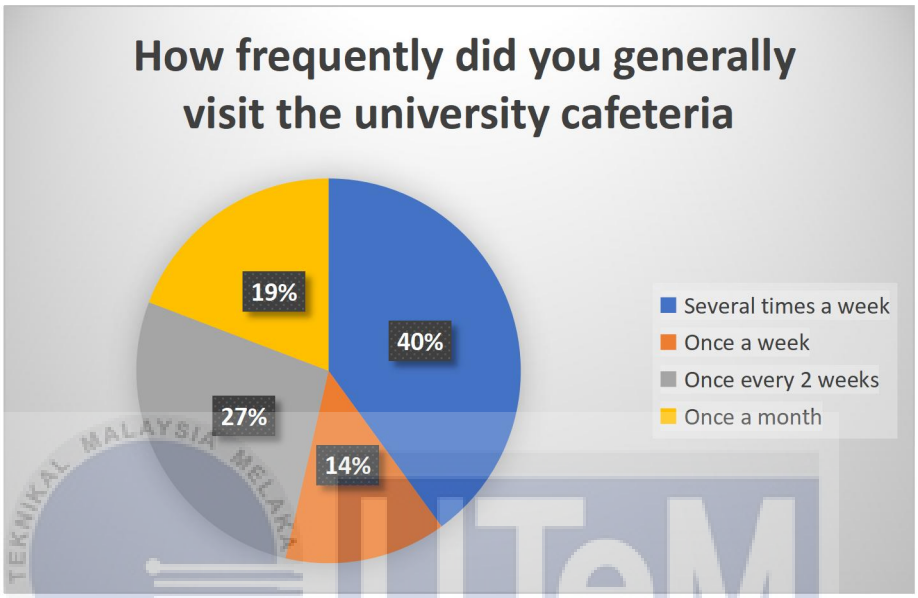

Figure 3: How frequently did you generally visit the university cafeteria

Figure 3 also depicts how frequently you typically visit the university cafeteria. The majority of respondents (50, or 40%) who were asked how frequently they typically visited the university cafeteria said "several times a week," while just 17 (13.6%), 34 (27.2%), and 24 (19.2%) said they visited once a week, once every two weeks, and once a month, respectively.

4.2.2 Have you ever heard of Quality Management

Figure 4: Have you ever heard of Quality Management

Figure 4 demonstrates whether respondents have ever heard of quality management. The majority of respondents, 106 (84.8%), said they had heard of quality management at some point, while only 19 (15.2%) said they had not.

4.2.3 Where did you first learn about Quality Management

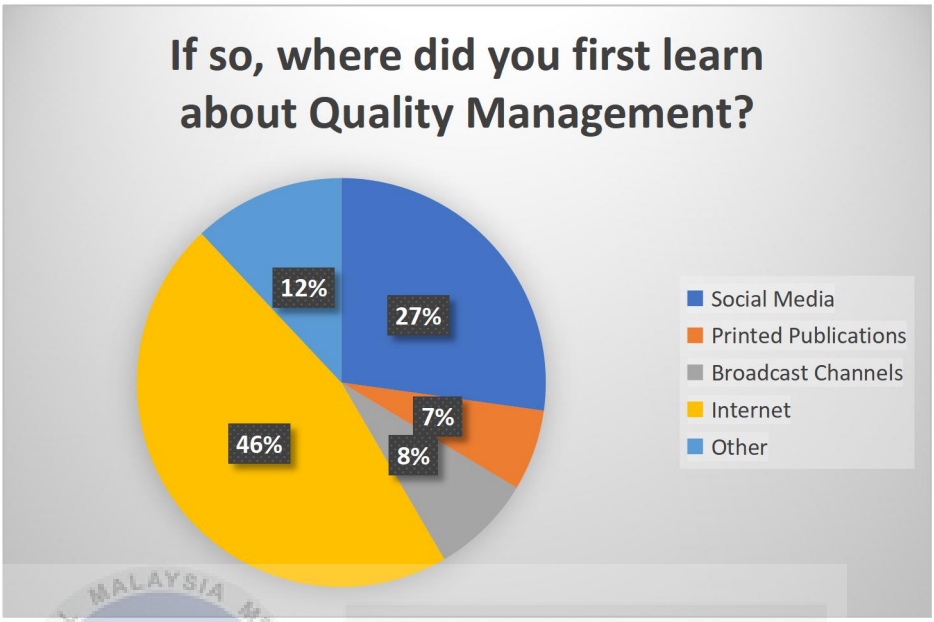

Figure 5: Where did you first learn about Quality Management

Figure 5 describes respondents' initial exposure to quality management. Only 34 (27.2%) of respondents say they first learned about quality management from social media, followed by 8 (6.4%) from printed publications, 10 (8%) from broadcast channels, and 15 (12%) from other sources. The majority of respondents (58, 46.4%) first learned about quality management from the internet.

4.2.4 Are there any Quality Management at UTeM's on-campus cafeteria that you have seen or experienced

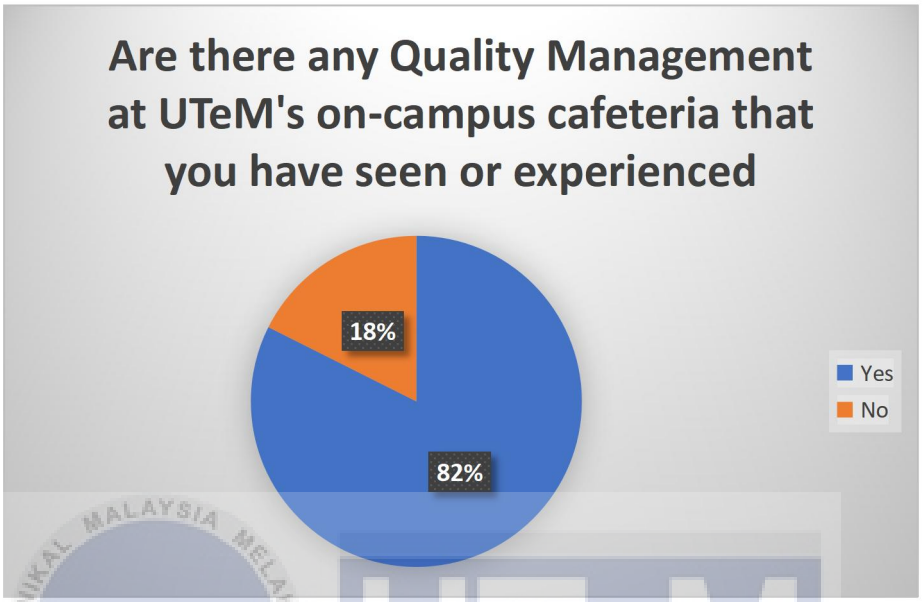

Figure 6: Are there any Quality Management at UTeM's on-campus cafeteria that you have seen or experienced

Figure 6 displays the respondents' experiences with quality management at the UTeM on-campus cafeteria. It indicated that 103 respondents (82.4%) answered "yes," whereas 22 (17.6%) responded "no."

4.3 Results Analysis

4.3.1 Pilot Study Results

Researchers usually employ pilot testing methods to evaluate the validity of questionnaires. In a preliminary survey, the researcher gathered data from 30 respondents. Additionally, the questionnaire may need to be revised based on the outcomes of the pilot test. Table 3 shows a summary of the case processing, showing that 30 respondents have valid data, and that all data have been processed with no missing data.

Table 3: Case Processing Summary of Pilot Study

(Source from SPSS output)

		N	%
Cases	**Valid**	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0

Table 4: Pilot Study Reliability Statistics

(Source from SPSS output)

Variables	Cronbach alpha	No of items
The Management Process	0.657	3
The Statistical Process	0.590	3
The Decision Making Process	0.657	3
Business Improvement	0.680	5

Table 4 shows the Cronbach Alpha for the reliability of pilot test results. The Cronbach's alphas interpretation on pages 34 revealed that the reliability of the Statistical Process (3 items; α = .590) was in doubt. Cronbach's alpha values of .657 are found in both the Management Process and the Decision Making Process. Researchers discovered that both are highly reliable. Higher reliability was discovered for the business improvement (5 items: α = .680).

4.3.2 Reliability Analysis

The overview of case processing is shown in Table 5 below. In order to determine whether the questionnaires were still valid, the researcher tested their reliability using 125 samples. The results of the reliability statistics are shown in Table 6. The three management process items and the three statistical process items each had a Cronbach's alpha of .684 and .642, respectively. This variable's reliability is satisfactory for both of them. Highly dependable subscales included the decision-making process subscale, which had three questions (α = .707), and the business improvement subscale, which had five items (α = .805).

Table 5: Case Processing Summary

(Source from SPSS output)

		N	%
Cases	**Valid**	125	100.0
	Excluded[a]	0	.0
	Total	125	100.0

Table 6: Reliability Statistics

(Source from SPSS output)

Variables	Cronbach alpha	No of items
The Management Process	0.684	3
The Statistical Process	0.642	3
The Decision Making Process	0.707	3
Business Improvement	0.805	5

4.3.3 Correlation Analysis

When examining the link between variables or changing any variable, researchers employ a correlational research design. Furthermore, this correlation will demonstrate how strongly two or more variables are related, and its direction may be either positive or negative (Pritha Bhandari, 2021). Results of the test for correlation between the variables are provided in Table 7 below.

Table 7: Reliability Statistics

(Source from SPSS output)

Correlations					
		The Management Process	The Statistical Process	The Decision Making Process	Business Improvement
The Management Process	Pearson Correlation	1	.703**	.838**	.527**
	Sig. (2-tailed)		.000	.000	.000
	N	125	125	125	125
The Statistical Process	Pearson Correlation	.703**	1	.681**	.388**
	Sig. (2-tailed)	.000		.000	.000
	N	125	125	125	125
The Decision Making Process	Pearson Correlation	.838**	.681**	1	.480**
	Sig. (2-tailed)	.000	.000		.000
	N	125	125	125	125
Business Improvement	Pearson Correlation	.527**	.388**	.480**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	125	125	125	125
**. Correlation is significant at the 0.01 level (2-tailed).					

The information in Table 7 above explains the findings of the investigation into the link between the application of quality management and university cafeteria business improvement. Significant correlations were found between the management process and the statistical process were found r =.703, p < .05, and between the management process and the decision making process r =.838, p < .05. Between the two variables, the statistical process and the management process had a substantial correlation r =.703, p < .05, whereas the statistical process and the decision-making process had a significant correlation r =.681, p < .05. Next, there was a substantial correlation between the decision-making process and the management process (r =.838, p < .05), as well as between the decision-making process and the statistical process (r =.681, p < .05). The management process was the only one with a significant correlation for business improvement (r =.527, p < .05), while the decision making process (r =.480, p >.05) and the management process (r =.388, p >.05) did not correlate.

4.3.4 Regression Analysis

This chapter makes use of multiple regression analysis to investigate the relationship between a single dependent variable and a number of independent variables. The management process, the statistical process, and the decision making process were examined using multiple regression to explain the variation in business improvement. The results of the multiple regression analysis between all parameters and the university cafeteria business improvement are displayed in Tables 8 and 9.

4.3.4.1 R-square and F-value

Table 8: R-square

(Source from SPSS output)

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.532[a]	.283	.265	.70018	.283	15.890	3	121	.000
a. Predictors: (Constant), MEANIV3, MEANIV2, MEANIV1									

Table 9: F-value

(Source from SPSS output)

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	23.370	3	7.790	15.890	.000[b]
	Residual	59.320	121	.490		
	Total	82.690	124			
a. Dependent Variable: MEANDV						
b. Predictors: (Constant), MEANIV3, MEANIV2, MEANIV1						

4.3.4.2 T-value

The t-value and significance value shown in Table 10 are used to determine the significance of the management process, the statistical process, and the decision-making process. The strength of each independent variable's impact on the dependent variable is contrasted using the standard beta coefficient. Thus, business improvement = 0.777 + 0.537 (the management process) + 0.012 (the statistical process) + 0.157 (the decision-making process) can be represented as the regression equation. Table 10 demonstrates that the beta coefficient is positive, meaning that the interpretation will change for every unit rise in the predictor variables and will also change as the beta coefficient value increases for the outcome variable. The management process was therefore determined to have a higher t-value.

Table 10: Coefficients Result

(Source from SPSS output)

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.777	.433		1.797	.075
	The Management Process	.537	.194	.414	2.771	.006
	The Statistical Process	.012	.108	.013	.115	.908
	The Decision Making Process	.157	.184	.124	.853	.395
a. Dependent Variable: MEANDV						

4.3.5 Hypothesis Testing

Hypothesis testing can be known as a statistical reference where it uses information from a sample to make inferences about a population parameter or a population probability distribution (Banerjee, Amitav, et al., 2009). Table 11 below shows the results of hypothesis testing. H1: There is a significant relationship between The Management Process and business improvement where, $p < 0.05$ and hypothesis H1 is supported, H2: There is no significant relationship between The Statistical Process and business improvement, $p > 0.05$ and hypothesis H2 is not supported while H3: There is no significant relationship between The Decision Making Process and business improvement, $p > 0.05$ and hypothesis H3 is not supported.

Table 11: Results of Hypothesis Testing

(Source from SPSS output)

Hypothesis	p-value	Support/Not Supported
H1: There is a significant relationship between the management process and business improvement	.006	Support
H2: There is a significant relationship between the statistical process and business improvement	.908	Not Supported
H3: There is a significant relationship between the decision making process and business improvement	.395	Not Supported

4.4 Summary

The report's current chapter presents the statistical methods used to analyse the data for hypothesis testing. Pilot studies were conducted prior to the statistical technique. The measurement model was then assessed using convergent and discriminating validity analysis. The data showed sufficient calculation validity values to proceed to the structural model. To test the proposed association between the variables in the current investigation, SPSS tools were employed. The analysis's findings revealed that three hypotheses were explored. Only one hypothesis was accepted.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.0 Introduction

The study will be reviewed in connection with the conclusions and results from Chapter 4 in this chapter. The proposed hypotheses will be assessed in light of the investigation's outcomes and conclusions. The research questions and the accomplishment of the objectives will be covered in this chapter. The research's implications are numerous. Finally, suggestions for the upcoming pertinent study will be offered in the chapter's final part.

5.1 Achievement of Research Objectives

5.1.1 Research Objective 1

RO1: To analyze significant relationship between the application of quality management and university cafeteria business improvement.

One of the research objectives is to analyse the significant relationship between the application of quality management and university cafeteria business improvement. The management of quality is responsible for directing all actions and duties required to uphold the intended standard of excellence. It includes the determination of a quality policy, creating and implementing quality planning and assurance, and quality control and quality improvement. All business stakeholders must collaborate to enhance procedures, goods, services, and corporate culture as part of quality management. Better products that could be manufactured at a lower cost were generated as a result of effective quality management.

International food control, public health, and regulatory bodies have recognised the principles of food safety management systems as benchmark techniques for food safety assurance. Food preparation errors in cafeteria where food is prepared for consumption are the primary cause of food borne disease outbreaks globally, according to research on their incidence (Davey, 1985; Osei-Tutu, 2018; Osei-Tutu and Annison, 2017). As a result, the ideas behind food safety management systems have been embraced globally by regulatory, public health, and food control bodies as standard practices for ensuring food safety.

Food sectors have largely adopted quality management practices, and there is clear evidence of increased food safety for products made using the HACCP system. The statistical method is the second. Statistical software programmes and sophisticated data gathering methods have substantially aided the widespread usage of control charting procedures. Third, the decision-making process is a quality management tool that may identify a choice, gather data, and evaluate potential solutions.

To demonstrate how well the data matched the regression model, the researcher employed a multiple regression model, whose $R2$ value is. A crucial phase in the structural model assessment is the $R2$ evaluation (Joe F. Hair et al., 2011). It displays the dependent variable's variance (Henseler et al., 2016). $R2$ must fall between the range of 0 to 1. $R2$ values between 0 and 1 represent mild, moderate, and significant variance, respectively. Therefore, based on Table 8 pages 59, three predictors were determined to have a strong connection as they explained 28.3% of the variance ($R2$ = .283, F (15.890), P < .000).

5.1.2 Research Objective 2

RO2: To investigate the correlation between the variables used in the quality management application.

The researcher will look at the correlation between the variables used in the quality management application in research objective 2. Positive patterns of significant relationships were present in addition to a strong correlation. According to Table 7 on pages 57, there was a substantial correlation between the management process and the statistical process ($r = .703$, $p < .05$), and there was a significant correlation between the management process and the decision-making process ($r = .838$, $p < .05$. According to the demographic analysis in Figure 4, 106 respondents (or 84.8%) had heard of quality management. It indicates that people are aware of and knowledgeable about quality management. There are several challenges to be overcome in the process of implementing quality management (Escanciano & Santos-Vijande, 2014a). The findings thus demonstrate a strong link between these variables and the management process.

Table 7 on page 57 demonstrates a substantial correlation between the statistical process and the management process r = .703, p < .05), while there was a significant correlation between the statistical process and the decision-making process r = .681, p < .05. In the on-campus cafeteria at UTeM, 103 people (82.4%) have seen or experienced quality management, while 22 people (17.6%) have not, according to Figure 6. The main advantages of an integrated management system, according to Ferreira et al. (2014), are the elimination of conflicts between separate systems with resource optimization, the creation of added value for the company by getting rid of various wastes, the integrated management of sustainability components in a global market, the improvement of partnerships with suppliers of goods and services, and the decrease in the number of audits. As a result, the management process and the decision-making process are strongly related to the statistical process.

In Table 7, pages 57, the decision-making and management processes were found to be strongly related, with r = .838, p < .05. Meanwhile, the decision-making and statistical processes were discovered to be significantly related with r = .681, p. According to Figure 3 pages 50, 50 (40%) of the respondents frequent the university cafeteria on a regular basis. Among them, the student cafeteria is a location where quick, inexpensive meals are served with a selection of healthy menus, and lots of employees and students congregate there at lunch (Ha & Ha, 2018). Specialized foodservice businesses began to emerge towards the end of 1980, and about 1995, full-scale professional foodservice businesses began to run student cafeterias. For student cafeterias, almost all colleges now provide catered lunches (Eum & Lyu, 2013). Student cafeterias do not understand the need to increase competition because the number of patrons is essentially fixed as students and employees, and they also have a subpar inside environment in comparison to restaurants outside. The college cafeteria, however, has changed from the past due to the upgrading of the restaurant industry, and college students today have been raised in a much better environment than they were in the past, along with the rise in national affluence. As a result, the management process and the statistical process are strongly related to the decision-making process.

The management process alone (r = .527, p < .05) was substantially connected with university cafeteria business improvement, but neither the decision making process (r = .480, p > .05) or the management process (r = .388, p > .05). According to the study, "food flavour" and "menu diversity" are the qualities that need to be handled closely for the quality of the cafeteria service (Jung, 2013). "Overall service quality" and "friendliness of personnel" are aspects of service quality that should be enhanced in the case of university students in the Taejon area (Yi, 2012). Cha and Lee (2018) used statistics to demonstrate that satisfaction with home meal replacement (HMR) product purchases was significantly influenced by convenience, freshness, and price. Consequently, the management process is the only factor that significantly influences university cafeteria business improvement.

5.1.3 Research Objective 3

RO3: To determine how quality management is most commonly used for university cafeteria business improvement.

In research objective 3, the researcher aims to determine how quality management is most commonly used to improve the cafeteria business at universities. Table 10 shows that the management process has a t(3) = 2.771, p =.006, the statistical process has a t(3) =.115, p =.908, and the decision-making process has a t(3) =.853, p =.395 According to Table 2, pages 49, the majority of the respondents to this survey—82, or 65.6%—were students, and 68, or 54.4%, were degree-level educated. People who frequent the university cafeteria are among those who responded to the questionnaire. As a result, they can understand quality management more readily.

According to Kwun (2011), elements such as food quality, menu selection, and customer service have a major impact on consumer value, which in turn affects customer happiness in student cafeterias. Food, menu, and convenience factors were among the student cafeteria's quality characteristics that had an impact on how much people thought a foodservice was worth, and value recognition led to higher levels of customer satisfaction (Ham, 2012). According to reports, student cafeteria value and intent to return are most strongly influenced by satisfaction with university lunch service quality (Jung, 2013). According to Kim (2006), aspects related to meal satisfaction influenced student desire to return and recommendation intention for restaurant cafeteria service quality. Generation Y's intention to remain loyal and their intention to reuse are directly influenced by how satisfied they are with the student cafeterias (Kim, 2013). According to Green (1992), an effective method for gaining repeat business is to focus on customer happiness, referral intent, and intention to return (Cha & Seo, 2018).

Figure 4 pages 51, Figure 5 pages 52, and Figure 6 pages 53 show that the majority of respondents—106—said they had heard of quality management at some point. Of those, 58 (46.4%) first learned about it online, and 103 respondents (82.4%) said "yes" when asked whether they had seen or experienced quality management at UTeM's on-campus cafeteria. As a result, the quality management procedure is the most widely applied quality management method for enhancing university cafeteria operations.

5.2 Analysis of Research Hypothesis

Three hypotheses are included among the variables in the research model. The results of the data analysis in Table 11 on page 62 indicate that only one hypothesis is true: H1: There is a significant relationship between management process and business improvement, $p < .05$. The other two hypotheses showed that they were not supported where H2: There is a significant relationship between statistical process and business improvement, $p > .05$. and H3: There is a significant relationship between the decision-making process and business improvement, $p > .05$.

First and foremost, the outcome showed a strong correlation between the management process and business improvement (H1). This is true because an effective management process will sequence the problems for resolution. The cafeteria will do a cause-and-effect analysis to address the issue if they comply with an excellent management process. A great cafeteria management process will guide the owner in addressing the issues the customers had. Additionally, "employees demonstrate a sincere regard for their customers," "maintaining service quality and fast food during busy times," according to reports (Aigbedo & Parameswaran, 2004).

According to the descriptive analysis, 50 respondents (or 40%) who were asked how often they regularly visited the university cafeteria responded "several times a week," and 103 respondents (or 82.4%) have seen or experienced quality management at the on-campus cafeteria at UTeM. It demonstrates how the on-campus cafeteria at UTeM uses a management strategy that makes it simple for customers to learn, observe, and receive accurate information. As a result, the hypothesis for H1, "There is a significant relationship between the management process and business improvement," is supported.

Second, the results indicate that there is no significant relationship between the statistical process and business improvement (H2). It can be because the caterers don't always ensure above-average service (if not excellent). Since there is never a quick fault identification that increases it, there are no quality results. Sensitive quality issues are also not given the consideration they need. "Food quality and price" and "staff friendliness" were found to have an impact on students' happiness at university cafeterias (Andaleeb & Caskey, 2007).

Only 34 (27.2%) of respondents claim to have first learned about quality management from social media, with the remaining 8 (6.4%), 10 (8%), and 15 (12%) citing printed publications, broadcast channels, and other sources, according to the descriptive analysis shown in Figure 5 on pages 52. The majority of those surveyed (58, 46.4%) said they first learned about quality management online. Figure 3 on page 50 reveals that 17 (13.6%), 34 (27.2%), and 24 (19.2%) of them reported visiting once a week, once every two weeks, and once a month, respectively. The majority of them are unlikely to be familiar with quality management and its impact on the outcome since they were unaware of what had occurred. Therefore, the hypothesis for H2: There is a significant relationship between statistical process and business improvement is not supported.

In addition, the finding shows that there is no significant relationship between the decision-making process and business improvement (H3). Although material systems enhance catering operations, the cafeteria does not appear to do the same. Cha and Yu (2018) demonstrated that hedonistic eating-out motivations have a greater impact on the significance of empirical qualities like the menu, service, and environment in restaurants than they do on functional features like the cost, cleanliness, and accessibility. Because of this, clients demand "on-time" service, and there are no quality practises that can improve performance.

Based on the descriptive analysis at Figure 6 on pages 53, it stated that 22 respondents (17.6%) had never seen or experienced any quality management at UTeM's on-campus cafeteria. Therefore, the hypothesis for H3, "There is a significant relationship between the decision-making process and business improvement," is not supported.

5.3 Research Contribution

This study explores the application of quality management to improve university cafeteria business. As a result, it is anticipated that this study will look into how satisfied UTeM communities are. This study might also highlight the main obstacle to implementing quality management. This study can also highlight the most important factors for improving the university cafeteria business. According to Saglik et al. (2014), in order to compete in the market, all food service operations should prioritize food service quality because it has been shown to be an effective factor in ensuring student satisfaction (Raman and Chinniah, 2011).

Furthermore, cafeteria owners must understand this research because it will help them when they apply for quality management at their business. The application used in cafeteria requirements management encompasses a variety of customer satisfaction issues. According to recent research by Eunkyung et al. (2013), improving food service in accordance with ongoing assessments and surveys is essential to raising students' satisfaction. Another recent empirical study highlighted the fact that the quality of the cuisine has a significant impact on students' happiness with the university cafeteria, followed by the service staff and ambiance (Dimitrios and Katerina, 2014). As they are fully aware of local food service quality, students are not limited to the quality of food served on campus. Therefore, it is necessary to improve the quality of service provided in on-campus outlets in order to keep students from engaging in alternative search methods.

Finally, the UTeM community, particularly those who visit the on-campus cafeteria, needs to know about this study. One of the factors that can lead to client satisfaction in a fine dining setting is an outstanding degree of service quality (Hanefors and Massberg, 2003). One of the most important business goals that must be closely monitored to ensure repeat business is customer satisfaction (Sulek and Hensley, 2004). A recent study demonstrated statistical significance in the association between food quality characteristics and customer satisfaction (Nor et al., 2016).

5.4 Recommendation of Further Research

To enhance the study and raise the research quality under the appropriate title, the researchers provide some recommendations for future research projects. As the university population is significant in Malaysia, the researchers advise taking this into account when choosing a larger sample size for future studies in order to create more accurate and reliable results. In addition, the sample size of 125 respondents used for this study is seen as being too small and unrepresentative of the broader population. In addition, three settings were proposed by the research framework used in this study: the management process, the statistical process, and the decision-making process. This concept calls for the empirical measurement of every environment. Therefore, each scenario in this suggested model can be empirically evaluated in subsequent studies for more corroborating findings. Therefore, it is crucial to take into account how the change in political party has led to numerous developments, especially in the food industry.

5.5 Conclusion

In summary, this research aims to know and understand the application of quality management for university cafeteria business improvement. In order to perform this study, the researcher used SPSS, a statistical package for the social sciences, to analyse the results from 125 respondents at UTeM. According to the research's findings and conclusions, the decision-making and statistical processes are not favorably correlated with or significantly related to the university cafeteria business improvement, but the management process is. As a research model includes 3 hypotheses among the variables which is H1: There is a significant relationship between management process and business improvement. This hypothesis is the only one accepted with the p-value is less than 0.05. The other two hypotheses showed that they were not supported where H2: There is a significant relationship between statistical process and business improvement, and H3: There is a significant relationship between the decision-making process and business improvement, $p > .05$.

REFERENCES

Aboagye, G., Gbolonyo-Cass, S., Kortei, N. K., & Annan, T. (2020). Microbial evaluation and some proposed good manufacturing practices of locally prepared malted corn drink ("asaana") and Hibiscus sabdarifa calyxes extract ("sobolo") beverages sold at a university cafeteria in Ghana. *Scientific African*, *8*, e00330. https://doi.org/10.1016/j.sciaf.2020.e00330

Ahmed, G., Inairat, M., & Alzoubi, H. (2020). Investigating the Impact of Total Quality Management (TQM) Practices and Six Sigma Processes to Enhance the Quality and Reduce the Cost of Quality: The Case of Dubai. *International Journal of Business Excellence*, *1*(1), 1. https://doi.org/10.1504/ijbex.2020.10039342

Aleksandrova, S. V., Aleksandrov, M. N., & Vasiliev, V. A. (2018). Business Continuity Management System. *2018 IEEE International Conference "Quality Management, Transport and Information Security, Information Technologies" (IT&Amp;QM&Amp;IS)*. https://doi.org/10.1109/itmqis.2018.8525111

Alves, C. A., Vicente, E. D., Evtyugina, M., Vicente, A. M., Nunes, T., Lucarelli, F., Calzolai, G., Nava, S., Calvo, A. I., Alegre, C. D. B., Oduber, F., Castro, A., & Fraile, R. (2020). Indoor and outdoor air quality: A university cafeteria as a case study. *Atmospheric Pollution Research*, *11*(3), 531–544. https://doi.org/10.1016/j.apr.2019.12.002

Aslam, R., Alam, M. S., & Saeed, P. A. (2019). Sanitization Potential of Ozone and Its Role in Postharvest Quality Management of Fruits and Vegetables. *Food Engineering Reviews*, *12*(1), 48–67. https://doi.org/10.1007/s12393-019-09204-0

Bordlein, C. (2020). Promoting Hand Sanitizer Use in a University Cafeteria *Behavior and Social Issues*, *29*(1), 255–263. https://doi.org/10.1007/s42822-020-00026-y

Bouwman, H., Nikou, S., & de Reuver, M. (2019). Digitalization, business models, and SMEs: How do business model innovation practices improve performance of digitalizing SMEs? *Telecommunications Policy*, *43*(9), 101828. https://doi.org/10.1016/j.telpol.2019.101828

Braidotti, R. (2018). A Theoretical Framework for the Critical Posthumanities. *Theory, Culture & Society*, *36*(6), 31–61. https://doi.org/10.1177/0263276418771486

Bravi, L., Murmura, F., & Santos, G. (2019). The ISO 9001:2015 Quality Management System Standard: Companies' Drivers, Benefits and Barriers to Its Implementation. *Quality Innovation Prosperity*, *23*(2), 64. https://doi.org/10.12776/qip.v23i2.1277

Chaoniruthisai, P., Punnakitikashem, P., & Rajchamaha, K. (2018). Challenges and difficulties in the implementation of a food safety management system in Thailand: A survey of BRC certified food productions. *Food Control*, *93*, 274–282. https://doi.org/10.1016/j.foodcont.2018.06.004

Coelho, C., Mojtahedi, M., Kabirifar, K., & Yazdani, M. (2022). Influence of Organisational Culture on Total Quality Management Implementation in the Australian Construction Industry. *Buildings*, *12*(4), 496. https://doi.org/10.3390/buildings12040496

Duan, Y., Cao, G., & Edwards, J. S. (2020). Understanding the impact of business analytics on innovation. *European Journal of Operational Research*, *281*(3), 673–686. https://doi.org/10.1016/j.ejor.2018.06.021

Dumas, M., La Rosa, M., Mendling, J., & Reijers, H. A. (2018). Introduction to Business Process Management. *Fundamentals of Business Process Management*, 1–33. https://doi.org/10.1007/978-3-662-56509-4_1

Gebrehiwot, M. (2020). Quality of indoor air environment and hygienic practices are potential vehicles for bacterial contamination in University cafeteria: case study from Haramaya University, Ethiopia. International Journal of Environmental Health Research, 32(3), 511–521. https://doi.org/10.1080/09603123.2020.1781065

Grullon, G., Larkin, Y., & Michaely, R. (2019). Are US Industries Becoming More Concentrated?*. *Review of Finance*, *23*(4), 697–743. https://doi.org/10.1093/rof/rfz007

Haddock-Fraser, J., & Gorman, D. (2020). Building your influence: the role of the smart sustainability leader. *Emerald Open Research*, *2*, 53. https://doi.org/10.35241/emeraldopenres.13819.1

Harmon, P. (2019). *Business Process Change: A Business Process Management Guide for Managers and Process Professionals* (4th ed.). Morgan Kaufmann.

Hill, C. (2022, October 11). *How to create a social media viral video*. Sprout Social. https://sproutsocial.com/insights/social-media-viral-video/

Hoerl, R. W., & Snee, R. D. (2020). Statistical Thinking: Improving Business Performance,, 3rd Edition (Wiley and SAS Business Series) (3rd ed.). Wiley.

Ibarra, D., Ganzarain, J., & Igartua, J. I. (2018). Business model innovation through Industry 4.0: A review. *Procedia Manufacturing*, *22*, 4–10. https://doi.org/10.1016/j.promfg.2018.03.002

Ivanov, D., Dolgui, A., & Sokolov, B. (2018). The impact of digital technology and Industry 4.0 on the ripple effect and supply chain risk analytics. *International Journal of Production Research*, *57*(3), 829–846. https://doi.org/10.1080/00207543.2018.1488086

Johannisson, J., & Hiete, M. (2021). Environmental service-learning approach in higher education – a descriptive case study on student-led life cycle assessments of university cafeteria meals. *International Journal of Sustainability in Higher Education*, *22*(7), 1728–1752. https://doi.org/10.1108/ijshe-12-2020-0494

Koivunen, L., Laato, S., Rauti, S., Naskali, J., Nissila, P., Ojansivu, P., Makila, T., & Norrdal, M. (2020). Increasing Customer Awareness on Food Waste at University Cafeteria with a Sensor-Based Intelligent Self-Serve Lunch Line. *2020 IEEE International Conference on Engineering, Technology and Innovation (ICE/ITMC)*. https://doi.org/10.1109/ice/itmc49519.2020.9198571

Korada, S. K., Yarla, N. S., Putta, S., Hanumakonda, A. S., Lakkappa, D. B., Bishayee, A., Scotti, L., Scotti, M. T., Aliev, G., Kamal, M. A., Lu, D. Y., Aycan, M. B., Reggi, R., Palmery, M., Ashraf, G., Alexiou, T., & Peluso, I. (2018). A Critical Appraisal of Different Food Safety and Quality Management Tools to Accomplish Food Safety. Food Safety and Preservation, 1–12. https://doi.org/10.1016/b978-0-12-814956-0.00001-9

Lim, W. M., Ciasullo, M. V., Douglas, A., & Kumar, S. (2022). Environmental social governance (ESG) and total quality management (TQM): a multi-study meta-systematic review. *Total Quality Management & Business Excellence*, 1–23. https://doi.org/10.1080/14783363.2022.2048952

Ling, E. K., & Wahab, S. N. (2020). Integrity of food supply chain: going beyond food safety and food quality. *International Journal of Productivity and Quality Management*, *29*(2), 216. https://doi.org/10.1504/ijpqm.2020.105963

Mendling, J., Weber, I., Aalst, W. V. D., Brocke, J. V., Cabanillas, C., Daniel, F., Debois, S., Ciccio, C. D., Dumas, M., Dustdar, S., Gal, A., García-Bañuelos, L., Governatori, G., Hull, R., Rosa, M. L., Leopold, H., Leymann, F., Recker, J., Reichert, M., . . . Zhu, L. (2018). Blockchains for Business Process Management - Challenges and Opportunities. *ACM Transactions on Management Information Systems*, *9*(1), 1–16. https://doi.org/10.1145/3183367

Moser, M. A. (2018). Statistical Process Control (SPC) as an Instrument for Generating Competitive Advantages. *Gazdaság És Társadalom*, *10*(2), 83–100. https://doi.org/10.21637/gt.2018.02.05

Nelson, D. (2018). Mechanical Isolation: Examples And Definition. *Science Trends*. https://doi.org/10.31988/scitrends.32202

Osei Tutu, B., & Anfu, P. O. (2019). Evaluation of the food safety and quality management systems of the cottage food manufacturing industry in Ghana. *Food Control*, *101*, 24–28. https://doi.org/10.1016/j.foodcont.2019.02.028

Osman, A. R. (2018, June 18). *Investigating University Students' Satisfaction with on-Campus Cafeteria Services: An Empirical Study in Perspective of Private University | Asian Journal of Empirical Research*. https://archive.aessweb.com/index.php/5004/article/view/4107

Quality Management: Definition Plus Example. (2022, March 23). Investopedia. https://www.investopedia.com/terms/q/quality-management.asp

Rosak-Szyrocka, J. (2020, June 1). Quality management and safety of food in HACCP system aspect. https://sciendo.com/article/10.30657/pea.2020.26.11

Savelli, E., Murmura, F., Liberatore, L., Casolani, N., & Bravi, L. (2017). Consumer attitude and behaviour towards food quality among the young ones: empirical evidences from a survey. *Total Quality Management &Amp; Business Excellence*, *30*(1–2), 169–183. https://doi.org/10.1080/14783363.2017.1300055

SPSS Statistics Tutorials and Statistical Guides | Laerd Statistics. (2018). Multiple Regression Analysis Using SPSS Statistics. https://statistics.laerd.com/

Statistics How To: Elementary Statistics for the rest of us! (2022, March 16). Statistics How To. https://www.statisticshowto.com/

Syed Ibrahim, M., Hanif, A., Jamal, F. Q., & Ahsan, A. (2019). Towards successful business process improvement – An extension of change acceleration process model. *PLOS ONE*, *14*(11), e0225669. https://doi.org/10.1371/journal.pone.0225669

Towards Gender-Based Market Segmentation: The Differential Influence of Gender on Dining Experiences in the University Cafeteria Industry. (2022). *MANAGEMENT AND ECONOMICS REVIEW*, *7*(2), 182–200. https://doi.org/10.24818/mer/2022.06-06

Uluskan, M. (2022). Structural equation modelling – artificial neural network based hybrid approach for assessing quality of university cafeteria services. *The TQM Journal*. https://doi.org/10.1108/tqm-01-2022-0001

Warner, K. S., & Wäger, M. (2019). Building dynamic capabilities for digital transformation: An ongoing process of strategic renewal. *Long Range Planning*, *52*(3), 326–349. https://doi.org/10.1016/j.lrp.2018.12.001

What is Statistical Process Control? SPC Quality Tools | ASQ. (n.d.). https://asq.org/quality-resources/statistical-process-control

Wilcock, A. E., & Boys, K. A. (2017). Improving quality management: ISO 9001 benefits for agrifood firms. *Journal of Agribusiness in Developing and Emerging Economies*, *7*(1), 2–20. https://doi.org/10.1108/jadee-12-2014-0046

Zrymiak, D. (2017). The ASQ Pocket Guide for the Certified Six Sigma Black Belt. T.M. Kubiak. *Quality Management Journal*, *24*(2), 54–55. https://doi.org/10.1080/10686967.2017.11918509

APPENDIX

GANTT CHART FYP 1

Task/ Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Topic selection															
Topic confirmation															
Formulating research question and research objective															
Find the sources that related to the topic															
Identify the problem statement															
Writing on chapter 1															
Writing on chapter 2															
Writing on chapter 3															
Discussion of FYP 1 with Supervisor															
First submission of the report															
Prepare report presentation															
Presentation of FYP 1															
Correction of FYP 1															

APPENDIX B

GANTT CHART FYP 2

Task/ Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Discuss about Questionnaires															
Make Corrections															
Collect samples for pilot study															
Run SPSS for pilot study															
Collect samples															
Run SPSS for 150 sample															
Writing on chapter 4															
Writing on chapter 5															
Prepare slide presentation															
Submission of report and slide presentation															
Presentation for PSM 1															

APPENDIX C

QUESTIONNAIRES

SECTION A: DEMOGRAPHIC PROFILE

This section's objective is to study and evaluate the traits of the intended audience in order to better understand the behavior and how important quality management is. Several inquiries regarding your personal information are listed in this section. Please mark (/) the space provided.

1. Education level

- SPM
- STPM
- Diploma
- Degree
- Other

2. Occupation

- Student
- Self employed
- Work at private sector
- Work at public sector

3. How frequently did you visit the university cafeteria?

- Several times a week
- Once a week
- Once every 2 weeks
- Once a month

4. Have you ever heard of Quality Management?

- Yes
- No

5. If so, where did you first learn about Quality Management?

- Social Media
- Printed Publications
- Broadcast Channels
- Internet
- Other

6. Are there any Quality Management at UTeM's on-campus cafeteria that you have seen or experienced?

- Yes
- No

SECTION B: THE APPLICATION OF QUALITY MANAGEMENT

The following statements summarize observations you made regarding Quality Management at UTeM's on-campus cafeteria.

Please evaluate your hypothesis using relevant scale:

1. Strongly agree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

7. The Management Process

	1	2	3	4	5
It is good for the cafeteria to prioritize the most pressing issue to solve.					
It is good if the cafeteria carries out cause and effect analysis to solve the cafeteria issue.					
It is good if the cafeteria asks about the problem the customer faced.					

8. The Statistical Process

	1	2	3	4	5
Caterers ensure the service is always above average (if not excellent).					
Effective defect detectors increase quality outcomes.					
Sensitive quality matters are taken into action.					

9. The decision making process

	1	2	3	4	5
Material System improves catering service.					
Timely service enhances customer confidence.					
Total quality focus improves workers services.					

SECTION C: THE UNIVERSITY CAFETERIA BUSINESS IMPROVEMENT

The section includes testimonials the demonstrate how pleased you were with the university cafeteria's services.

Please evaluate your hypothesis using the relevant scale:

1. Strongly agree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

10.

	1	2	3	4	5
The cafeteria continuously works to boost its ability to ensure customer satisfaction.					
The cafeteria leadership's commitment contributes to the achievements of system efficacy.					
The cafeteria is able to retain customers by offering excellent goods and services.					
The cafeteria naturally generates customer interest until it goes viral on social media.					
The cafeteria vibe captured the consumer's interest and became word of mouth.					