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Strategies to Reduce Food waste in Restaurants

Andrea L. Ratliff
Walden University

Walden University

College of Management and Technology

This is to certify that the doctoral study by

Andrea Ratliff

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Review Committee
Dr. Ronald Black, Committee Chairperson, Doctor of Business Administration Faculty

Dr. James Glenn, Committee Member, Doctor of Business Administration Faculty

Dr. Theresa Neal, University Reviewer, Doctor of Business Administration Faculty

Chief Academic Officer and Provost
Sue Subocz, Ph.D.

Walden University
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Abstract

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MBA, Walden University, 2017

BSN, Towson University, 2000

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Some restaurant business owners lack food waste strategies to maintain or increase profits. Restaurant business owners are concerned with increases in food waste leading to a loss of business profitability and may lack food waste strategies to maintain or increase profits. Grounded in stakeholder theory, the purpose of this qualitative single case study was to explore strategies restaurant business owners used to decrease food waste to maintain or increase profit. Participants in this study comprised five restaurant owners in a metropolitan suburb on the United States east coast who successfully reduced food waste in their operations to maintain or increase profit. Data were collected from semistructured interviews, direct observations, and public company website information. Data were analyzed using Yin’s five-step data analysis process, and three themes emerged: employee training, standard operating procedures, and portion control. A key recommendation is for restaurant business owners to implement portion control strategies to decrease food waste and increase profit. The implications for positive social change include the potential to increase employment opportunities within the communities and boost profits within restaurants. Decreased food waste may also reduce landfill waste, a healthier community, and the environment.

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Dedication

This amazing work is dedicated to my Lord and Savior, my dear husband for his love and undying support, my loving mother and faithful aunt, as well as family and friends who have supported me on my journey. I have been blessed with supreme support and guidance throughout this complete victory. And for that, I say, “thank you.” My work has just begun. Again, thanks.

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Table of Contents

List of Tables

List of Figures

Section 1: Foundation of the Study

Reducing food waste has numerous positive socioeconomic and environmental benefits (Sakaguchi et al., 2018). Research on food waste has gained popularity; however, the focus has almost exclusively been on food waste behavior inside homes, grocery stores, and distribution facilities, rather than within restaurants (Aschemann et al., 2018). This omission in the research may have costly implications. For example, waste in the restaurant sector includes 4-10% of purchased food before it reaches the customer in the United States (Baldwin et al., 2011).

Background of the Problem

According to the National Resources Defense Council, plate waste in U.S. restaurants has increased over the past 30 years, mainly due to larger portion sizes (Gunde, 2012). Diners leave 17% of meals uneaten and over half of these uneaten meals are thrown away and not taken home by customers (Gunde, 2012). This amounts to approximately $100,000 from each $1 million spent on consumer food purchases results in restaurant waste (Christ & Burrit, 2017; Massow & McAdams, 2015). Furthermore, approximately one third of consumable food produced annually is discarded, lost, or degraded in all stages in the food supply chain (Gollnhofer, 2017; Kowalska, 2017; Liljestrand, 2017). The estimated economic cost of energy, fuel, water scarcity, labor, commodities, and miscellaneous food waste is estimated as $2.6 trillion per year (The Food and Agriculture Organization of the United Nations (FAO), 2014). Of this waste, the restaurant industry generated approximately 33 pounds of food waste per $1,000 of a restaurant's revenue (Juvan et al., 2018).

From a financial perspective, 9 to 23 billion USD worth of food is wasted annually (Lean Path, 2016). Scholars have shown that if strategies involving tracking food waste are used, at least 7% of the food waste can be reduced (Lean Path, 2016). Scholars have further anticipated that this could save 1.3$ billion each year for food businesses (ReFED, 2016). In 2013, the FAO of the United Nations determined that the greenhouse gas emitted annually due to food waste in landfills is very nearly equal to the total emissions of Cuba, approximately 3.3 billion tons of carbon dioxide per year (FAO, 2013).

Strategies and behaviors that lead to food waste in restaurants are vaguely mentioned in the available research on the topic (Sakaguchi et al., 2018). The behaviors leading to food waste in restaurants need further research, as Blum (2020) stated that there is an evolving amount of literature concerning food waste that focuses on behaviors leading to an increase in food waste. However, waste management strategies are lacking in the United States and the focus needs to be on food processes in restaurants (Blum, 2020). Such food processes include preparation, storage, food waste inventory systems, reducing consumer waste, and reducing portion sizes (Blum, 2020). The results of this qualitative single case study may help restaurant owners to manage food waste by examining behaviors and developing a set of strategies that can combat food waste and increase profits within the restaurant. The background to the problem has been stated; the focus will now be directed toward the problem statement.

Problem Statement

Consumer food practices, including the wasting of food, are influenced by income, attitudes, knowledge, and relationships (Shneerman & Oria, 2020). Of the foods served in restaurants, approximately 1.3 billion tons of edible food produced each year is wasted and lost (Roe et al., 2018). The general business problem is that some restaurant owners have not developed options for decreasing and diverting food waste which results in a loss of business profitability. The specific business problem is that some restaurant owners lack food waste strategies to maintain or increase profits.

Purpose Statement

The purpose of this qualitative single case study was to explore food waste strategies used by restaurant owners to maintain or increase profit. The target population consisted of five restaurant owners who were members of the Restaurant Association of Maryland (RAM) and had demonstrated success at reducing food waste in their operations. The restaurants included in this study generated no more than $700,000.00 in revenue annually and had five to 20 employees. The implications for positive social change could include a decreased amount of food waste within restaurants, thus increasing knowledge of food preparation, storage, and nutritional portions that can also result in an increase of profits and an increase of availability of jobs, which decreases unemployment within the community.

Population and Sampling

Data were collected from five purposely sampled restaurant owners on the East Coast of the United States. They were interviewed using a semistructured process which is based on their lived experiences within the restaurant sector. The interviews addressed food waste and the various strategies used to prevent or decrease food waste. I also directly observed various processes in the restaurant such as cooking, preparing, storing, and serving. The population for this single case study was restaurant owners who were members of RAM. Purposeful sampling is a qualitative research technique. Information-rich cases, which can have the potential to be most effective in exploring the stated phenomenon, were identified using purposeful sampling for this study (see Palinkas et al., 2015). A researcher can learn a great deal about issues of central importance when using purposeful sampling (Benoot et al., 2016). The possibilities of empirical generalizations are reduced and there is an increase in insights and in-depth understanding (Benoot et al., 2016).

Nature of the Study

The three research methods are qualitative, quantitative, and mixed methods (Saunders et al., 2015). A qualitative methodology was used in this study to address food waste strategies within restaurants. Qualitative researchers obtain data by means of open-ended questions that allow for conversational communication (Samul, 2017). An assessment of what participants are thinking and how they came to have those thoughts is incorporated in qualitative methodology studies (Bansal et al., 2018). Qualitative methodology is appropriate for this study because I explored how restaurant owners reduce food waste and increase profits by using interviews. Quantitative researchers use numerical and statistical measurements to examine the relationships between independent and dependent variables and to test hypotheses (Barnham, 2015). In quantitative research, data are gathered by means of structured statistical tools applied to large sample sizes and statistical inferences drawn from the sample, which are generalizable to the population; therefore, quantitative methodology is not appropriate for this study. Because I conducted a qualitative study, my samples were small, and the data were textual and not generally of a numerical nature. A quantitative methodology was not appropriate for this study because numerical data did not help me explore food waste strategies used by restaurant owners to maintain or increase profit. Mixed-method research includes qualitative and quantitative data (Sligo et al., 2018) and inductive and deductive reasoning, drawing on both open-ended and closed-ended data. Quantitative methodology was not used in this study; therefore, a mixed method approach was appropriate for this study.

A multiple case study design was used in this study. Qualitative researchers use a case study design to perform an in-depth investigation of a topic or phenomenon in its real-life setting (Yin, 2013). The focus of this study was to explore food waste strategies used by restaurant owners to maintain or increase profit. Researchers use narrative designs to focus on a person's life story and experiences (Avison et al., 2017), while a phenomenological design is used to explore lived experiences and mindsets (Berglund, 2015.) An ethnographic design is used to focus on the study of cultures (Edirisingha et al., 2017). Narrative and phenomenological designs were not appropriate for this study because participants' lives, or culture was not explored. In a single case study, the measure of the behavior owners of restaurants must decrease food waste was introduced. Yin (2013) stated that this allows for a cause and effect to be more readily established. Owners of restaurants and their behaviors toward reducing food waste within the restaurant were included in this study. Also included were chefs, waiters, and waitresses as I observed cooking, preparation, storage and serving of the food.

Research Question

How do restaurant owners use food waste strategies to maintain or increase profit?

Interview Questions

1. How did you identify or develop successful strategies to increase profits by decreasing food waste?
2. What strategies were not successful in helping you increase profits by decreasing food waste?
3. How did you assess the effectiveness of the strategies that you implemented to prevent food waste in restaurants?
4. What is your assessment of the amount of money that was being lost in your restaurant on a daily basis due to food waste?
5. What key barriers did you encounter while implementing strategies to decrease food waste within a restaurant?
6. How did you overcome these key barriers?

7. What additional information regarding strategies to increase profits by decreasing food waste would you like to share that we have not already discussed?

Conceptual Framework

The conceptual framework in this study was based on the stakeholder theory. Freeman developed stakeholder theory in 1984 (Freeman & McVea, 2001). Donaldson and Preston (1995) further developed the theory into distinctive areas, such as descriptive and normative. The stakeholder theory deals with how managers should perform and what they should do if they want to enhance the interest of the organization. Increasing profits is considered one of the enhancements. The theory helps the organization to redefine itself based on the benefits of the stakeholders to include stability of the organization (Fernández-Feijóo et al., 2012). Increased profits can be considered a benefit to the stakeholders and decreased profits can be considered a threat to sustainment or stability. Key constructs underlying the theory are that owners, with the help of managers, should manage the organization for the benefit of the stakeholders such as increased profits, support of the stakeholders' rights, interests, and needs; managers should also become the stakeholders' advocates in securing long-term stakes and ensuring survival. Stakeholders can be employees, banks, communities, and other entities. As applied to this study, the stakeholder theory holds that if profits are not increasing, maybe due to food waste, then the organization may need to be reorganized and redefined under management so that profits can increase, and food waste can decrease within restaurants.

Operational Definitions

Anaerobic digestion (AD): Anaerobic digestion is a traditional technology used in the stabilization of organic waste. AD has attracted more interests as it can generate renewable energy by recovering the biogas produced which is useful for landfills (Chiu & Lo, 2016).

Food and Agricultural Organization (FAO): The Food and Agricultural Organization is a specialized agency of the United Nations established in 1945 with the goal of eliminating hunger and improving nutrition and standards of living by increasing agricultural productivity (Mingst, 2006)

Food Waste: Food waste refers to any food discarded despite being appropriate for human consumption, whether it is kept beyond its expiration date or left to spoil (Food and Agriculture Organization of the United Nations, 2013).

Methane: Methane is a greenhouse gas 23 times as potent as carbon dioxide in trapping heat within the atmosphere (Brown, 2016). Methane is generated by food waste within landfills (Brown, 2016).

Assumptions, Limitations, and Delimitations

Assumptions

Assumptions help frame the analysis within a study as stated by Roberts (2017). They are usually so basic and obvious that they are simply taken for granted and are the researcher’s own contemporary experience (Roberts, 2017). There were two assumptions in this study. The first assumption was that restaurant owners would understand that food waste relates to profits and that the questions would be answered truthfully. The second assumption was that participants in this study were willing and cooperative in answering interview questions in this study.

Limitations

Pasek (2007) stated that the limitations of the study are those characteristics of design or methodology that impact or influence the application or interpretation of the results of a study. Limitations are the constraints on generalizability and utility of findings that are the result of how a researcher chose to design the study and/or the method used to establish internal and external validity (Pasek, 2007). Researchers can identify potential weaknesses in research studies through describing limitations (Christensen & Johnson, 2014). There were four limitations in this study. The first limitation was the lack of reliable data as it pertains to food waste within restaurants. The second limitation was the small sample size. The small size was due to potential participants' expressed apprehension about participating in the study. The third limitation was that the results of the study may not be generalizable across the United States and in other countries. The fourth limitation was that participants may have a particular stance, viewpoint, or other factor driving their participation.

Delimitations

Delimitations are restrictions imposed by a researcher to narrow the scope of a study (Christensen & Johnson, 2014). They are created before any investigations are carried out to reduce the amount of time or effort spent in certain unnecessary, and perhaps even unrelated, areas to the overall study (Alpi, & Evans, 2019). There were two delimitations in this study. The first delimitation was that study participants were purposively selected from five business owners of five restaurants located in a metropolitan suburb on the East Coast of the United States; the second delimitation was that the study consisted of only restaurant owners.

Significance of the Study

Contribution to Business Practice (Heading Optional)

Approximately 30% of the edible food produced in the United States is wasted and a significant portion of this waste occurs at the consumer level (Shneerman & Oria, 2020). Consumers are responsible for 43% of food waste; restaurants are responsible for 18% of food waste, and the percentages of food waste by farmers and distribution facilities are 16% and 13% (USDA, 2013). Most studies concerning food waste concentrate on farmers and distribution facilities, with less focus on restaurants (USDA, 2013). The percentages of food waste by farmers and distribution facilities are lower than that of restaurants. The results of this study may contribute to business practices by sharing set strategies. The strategies may decrease food waste and increase profits. Increased profits allow restaurant owners to expand. The expansion of the business can result in additional jobs and increased knowledge of food preparation, storage, and usage. The increase in all these factors may enhance business satisfaction and further increase profits.

Implications for Social Change

The implementation of certain strategies to decrease food waste in restaurants could contribute to social change. The contributions may be donations or direct food supply to shelters. Contributions may also include the development of programs to feed underprivileged families. The results of this study may contribute to or provide impetus for positive social change by educating customers on proper nutrition portions, being able to contribute food to vulnerable communities, having more funds available for the implementation of programs within the community, and reducing food at landfills, which means fewer chemicals being excreted into the environment, which results in cleaner air for everyone.

A Review of the Professional and Academic Literature

The purpose of this qualitative single case study was to explore food waste strategies used by restaurant owners to maintain or increase profitability. Certain methods pertaining to food waste in restaurants have been proven to be effective in decreasing waste and maintaining profits (Filimonau et al., 2019). This literature review begins with an exploration of stakeholder theory which is the basis for the conceptual framework in this study. Additional theories discussed in this literature review include leadership theory, behavior theory, contingency theory, situational leadership theory, relationship theory, participative theory, and management theory. Critical analysis and synthesis of current and past literature provides an in-depth view of past and present research on the topic of food waste management, resulting in the identification of key themes.

The review of academic literature began with the search of specific keywords such as *niche market restaurants*, *price reduction when nearing expiry*, *prior survey for food demand*, *resale for animal feeds*, *preservation*, *food commercialization*, *knowledge,* and *education on food production*. Articles, books, and journals related to the topic of food waste in restaurants were reviewed for this literature review. Using Walden

University's library, the articles used in this study were from the following databases: Business Source Complete, Science Direct, ABI/Inform Complete, and Emerald Management, as well as Google Scholar. I used Walden Library's filter as well as Ulrich's Global Series Dictionary to ensure that the articles were peer-reviewed. Table 1 summarizes the resources used in the review. The literature review contains 108 references; 95% were peer reviewed.

Table 1

Literature Review Resources

Resources	Total no. of resources	No. of resources 5 years or less (2017-2021)	No. of resources more than 5 years old (2017 and older)	Percentage of resources used
Journal articles	101	90	11	95%
Books	5	5	0	100%
Dissertations	2	2	0	100%
Total sources in literature review	108	97	11	100%

Note. Journal articles were peer reviewed.

The strategies that have been applied to prevent and manage the volumes of waste that is generated were explored to identify solutions to the food waste problem. These strategies have been inspired by the application of stakeholder theory to shape the management, leadership, and the behaviors of those in leadership. Restaurant owners can use stakeholder theory to describe the factors behind the strategies and the actions in the management of food waste problems.

Origin of Stakeholder Theory

For any organization or project to be successful, people working within it should be aware of the impact that the organization will have on the community and other corporate shareholders (Bonnafous-Boucher & Rendtorff, 2016). Organizational leaders who are aware of the various ethical aspects that must be incorporated into operations and processes are mainly working toward protecting the community from any kind of major harm. According to De Gooyert et al. (2017), being ethically responsible toward the community and other corporate shareholders forms a complete stakeholder theory.

Stakeholder theory was created by Freeman in 1984. He highlighted that in capitalism, the only stakeholders that a corporation should care about are its shareholders. Freeman's view focused on the notion that companies are obligated to make a profit, satisfy their shareholders, and ensure that there is continuous growth. According to Ma et al. (2018), two definitions of stakeholder were proposed that were inspired by Igor Ansoff's work in the early 1960s: a *wide* definition and a *narrow* definition. Freeman's definition of stakeholder is the narrow definition. In the wide definition, a stakeholder is any identifiable group or individual who can affect the achievement of an organization's objectives. The stakeholder ecosystem consists of any individual who has invested, is involved, or is affected by the company in any way. These individuals are employees, environmentalists that are part of the company's plants, vendors, and governmental agencies, among many others. Kline and McDermott (2019) emphasized that a corporation's real success lies in satisfying all its stakeholders, rather than just focusing on those individuals who might bring profit to the corporation. In the article, *Stakeholder*

Theory of the Corporation, Donaldson, and Preston (1995) explained stakeholders should be perceived as providing profitable or financial benefits. Managers should be focused on the instrumental (profitable) aspect of the company's financial wellbeing. Focusing on the profitable financial metrics and challenges or status of the company is a means to improve the financial performance of the company. Stakeholder theory is about recognizing the connections or lack of connections that exist between stakeholder management and the achievement of traditional corporation objectives, which incorporate profits and financial stability. Stakeholder theory may be perceived differently by different analysts because each perspective is appropriate considering the type of operations a business is running.

The Evolution of Stakeholder Theory

Stakeholder theory, as established by Friedman in 1984, has gone through an evolution, leading to the theory being used by different organizations in different ways. Freeman and Dmytriyev (2018) stated that stakeholder theory has been used along with corporate social responsibility (CSR) to satisfy their shareholders and ensure that there is organizational growth. Stakeholder theory is linked to business ethics, which is used in CSR as well (Freeman & Dmytriyev, 2018). Similarities exist between stakeholder theory and CSR that emphasise the significance of incorporating societal interests into business strategies, processes, and operations. Businesses are part of society, which means that there is a need to focus on the social aspect of the business as well, not just financial metrics and profitability, with the underlying idea that business should support the communities from which they earn their profits. Stakeholder theory has been incorporated into CSR, in the sense that focus has shifted toward the community and the environment. The evolution of stakeholder theory toward an emphasis on improving the environment has been a major focus for organizations (Ranängen, 2017).

Instrumental stakeholder theory emphasizes the performance aspect for firms as it pertains to profits (Jones et al., 2018) Ethical relationships with different stakeholders focuses on trust, cooperation, and information sharing. The financial aspects of a company, along with considering the advantages of competitive advantage, are solely focused on the instrumental stakeholder theory. Kaur and Lodhia (2018) identified that economic sustainability is a new stakeholder theory aspect exemplified by the 21st century business models. Economic sustainability within stakeholder theory helps support the idea that organizations are not only more environmentally friendly but also are more inclined toward thinking of the community that it serves.

Scholarly Findings of the Theory

Stakeholder theory is broadly accepted by business leaders; however, there are certain aspects of the theory that are still ambiguous and subjective (Miles,2017). Organizational leaders use stakeholder theory when engaging in relationships with different groups. There could be diverse reasons (such as financial stability, ethical awareness, social empowerment, and other aspects) for manager and employee engagement; however, using stakeholder theory, leaders focus solely on relationships, considering processes and results for the organization and the stakeholder. According to Freudenreich et al. (2020), stakeholder theory can be combined with other business models considering value creation for economic sustainability. The authors further stated that business models are basically developed and managed to create value. In the business model, stakeholder value and framework can be provided based on the characteristics of stakeholder theory (Freudenreich et al., 2020).

The business case for stability is linked to economic sustainability and CSR (Schaltegger et al., 2017). Schaltegger et al. analyzed how stakeholder theory can be used for economic sustainability, allowing the businesses to work on their sustainability in cooperation with the stakeholders. Some business leaders have started using stakeholder theory to incorporate environmental protocols into their core business processes, as this would help in branding the business and showing the business in a positive way to the community. Vitolla et al. (2019) outlined that for any organization to be successful in a secure manner, its stakeholders must be willing to pursue the responsibility of implementing sustainable measures.

Stakeholder Theory

There is a need for stakeholders to ensure they are implementing sustainable processes, protocols, and measures at various points in the operations of an organization. The implementation of environmental processes and protocols may help restaurant owners in using the stakeholder theory in a manner conducive to a greater firm profitability and environmental sustainability. The high level of food waste points out to the restaurant owner that food resources are being misused (Vitolla et al., 2019). Food waste in restaurants mainly occurs through overbuying, overproduction, and spoilage (Vitolla et al., 2019). Excessive food wastes can be controlled if restaurant owners who deal with food resources are responsible for the use of it. Filimonau and Delysia (2019) outlined that there are various stakeholders (owners/investors of the restaurant, employees working in the restaurant, customers who will consume food from the restaurant, vendors, and suppliers of the restaurant) involved in the dealing and handling of food resources. Therefore, everyone focusing on being responsible toward the purchase and use of the resources would help decrease food waste significantly.

Stakeholder theory stresses that ethics, morals, and values must be emphasised when managing stakeholders in a project or organization. Mattila et al. (2020) outlined that using stakeholder theory in food waste in restaurants would be a good approach to help in controlling the waste at various points of operations in restaurants. From placing the purchase, to the handling of food products at the delivery point, to handling and using products while preparing the food, stakeholder theory can be used to increase values, morals, and ethics of restaurants.

The emphasis of stakeholder theory is on maintaining ethics, morals, and values of managing individuals (stakeholders) who are part of the organization. Different analysts have different views regarding stakeholder theory, with some focusing only on the financial aspect and some focusing on shareholders only. Over time, managers have used stakeholder theory for different purposes, such as the ability to maintain and to attain competitive advantage as well as looking for value creation for businesses. Stakeholder theory is used by management to create value and ensure ethical behaviour in restaurants. This can be effective in reducing food waste by making certain that everyone in the operation shares responsibility for utilizing food resources in an effective way.

Effective Strategies through Leadership and Management for Managing Food Waste

Effective leadership and management strategies can help reduce food waste. Buczacki, Gładysz, and Haskins (2020) stressed the significance of leadership and management approaches, which can provide positive results when applied by the restaurant owners to solve problems of food waste in restaurants. Managerial decisions support the prevention of food waste through the implementation of a food waste audit to mitigate the problem (Dorn et al., 2018). By implementing leadership strategies that influence, engage, and encourage their employees to manage and reduce food waste. Restaurant owners have maximized profits by minimizing food waste (Blum, 2020).

Leadership Theories

Leaders use leadership theories to make decisions that provide the guidance of their food industries to help them to decrease food waste and increase profits. Leadership theories have evolved over time to suit the most pressing leadership needs (Blomme et al., 2015). Leadership theories are classified into traits and behaviors that people can adopt to increase their leadership capabilities. Leadership traits and behaviors are based on the style of leadership employed. The chances of change initiative success such as decreasing food waste are increased using restaurant leader theory. Leadership development initiatives enhance organizational leader competencies. Leaders enhance their competency through development interventions (Offermann & Coats, 2018). Restaurant owners use leadership development initiatives to teach and guide staff, solve problems, and build relationships leading toward economic stability. (Magsaysay &

Hechanova, 2017). The ideas that are adopted by the leader will influence the level of success of the organization and will be the primary determinant of whether the desired level of success is achieved (Offermann & Coats, 2018). Leadership theories in the restaurant industry can be instrumental in influencing the decisions that are made in the handling and management of food to minimize any waste and ensure optimal decisions are made in such businesses.

Behavioral Leadership Theory

Behavioral leadership theory is grounded on the assumption that an effective leader displays behaviors that are receptive and allows a group to be productive toward the goals of the organization (Deshwal & Mohd, 2020). Human behaviors are influenced by many factors such as culture, environment, or even the prevailing situation at the moment of decision making (Magsaysay & Hechanova, 2017). The behavior of a leader is a great determinant of their success in getting others to cooperate with them in meeting firm objectives (Ghasabeh et al., 2015). The character of a person in a leadership explains the use of the behavioral leadership theory. The behavioral leadership theory has been used frequently by leaders in the restaurant industry to enhance their relationship with others in the workplace (Ospina et al., 2020). Behavioral leadership theory has enabled leaders to develop the best strategic behavior they can employ in the workplace (Ospina et al., 2020).

Empirical studies have shown that a chosen leadership style may not be suitable in all contexts (Roe et al., 2017). Applying the same leadership style in every situation may not lead to the desired result. Behavioral theories are influenced by the environment and by the people who are supposed to enact the behavior as stipulated by the theory (Roe et al., 2017). The environment may or may not allow for the implementation of the behavior as required by the theory. People who are working under a certain style of leadership may have problems or difficulties adapting to certain ways of doing things. These leadership limitations may affect the effectiveness of organizational results. (Ospina et al., 2020). The application of the appropriate leadership theory in the restaurant industry is used to manage strategic food waste strategy. Owners (leaders) in the restaurant industry can teach their followers how to address food shortage.

Other Leadership Theories

Other applied leadership theories include contingency leadership theory, situational leadership theory and participative leadership theory. The contingency theory of leadership is an example of a leadership theory that asserts there is not a perfect way of organizing a corporation, leading a company, or making decisions. The theory is based on the assumption that optimal action is contingent on internal and external situations (Nawaz & Khan, 2017). The contingency leadership theory is flexible and posits that there is no single best method of leadership. Contingency leadership theory is used to assess the problem and develop the most suitable style to help the issue (Northouse, 2018). The approach has brought flexibility and allowed restaurant owners to approach the problem in several perspectives with the aim of maintaining and making increasing profits. Therefore, in situations where excess food is available in the restaurant, contingency leadership theory requires strategies identified to minimize the possibility of food waste. Consequently, the portion served to the customers may have to be reduced to minimize waste or it may be prudent for restaurants to invest in storage facilities to address food waste. Proponents of contingency management theory have argued strongly that no single method works for all organizations.

Situational leadership theory allows for flexibility and eliminates the possibility of rigidity in decision making which may lead to the settling of inappropriate measures (Lussier & Achua, 2015). Most business environments change with time depending on the economy and the people involved. Leaders and managers assess the needs of the population and the market before deciding on the amount of food that should be prepared daily (Oberer & Erkollar, 2018). The creation of an excellent working environment is critical to rallying all the employees to work toward the same objective. In such instances, the restaurant staff will likely provide a clear inventory of the amount of food available or ordered at any moment in time. The amount of food available or ordered indicates the opportunity for food waste to be minimized. In addressing food waste in restaurants, all the employees in the organization will be expected to work toward the same objective. Consequently, plans for the amount of food needed can be provided by the inventory management team while waiters and other groups serving customers can assess the number of patrons visiting the restaurants daily. This can provide insights into the correct amount of food that may need to be sold in the restaurant every day (Bhatti et al., 2019).

Participative theory is the best form of leadership involving people and their needs. Participative theory recognizes input from participants and views the participants as team members. In the participative leadership approach, all the employees in the organization will be working toward the same objective (Bhatti et al., 2019). In addressing food waste in restaurants, all the employees in the organization will be expected to work toward the same objective. Consequently, plans for the amount of food needed can be provided by the inventory management team while waiters and other groups serving customers can assess the number of patrons visiting the restaurants daily. Insights into the correct amount of food that may need to be sold in the restaurant every day are based on customer history (Bhatti et al., 2019). Managing the food waste will ensure that the inventory of the food ordered is the correct amount, thereby minimizing any food waste.

Leadership theories such as contingent, situational, and participative theories may be applied within the restaurant and are based on certain conditions within the restaurant. The conditions consist of external situations, environmental change, and the involvement of participants. Leaders who use contingent, situational, and participative theories may help in the reduction of food waste in restaurants and the increase in profits.

Management Theories

Management theories consist of collaboration with and consideration of, and from, subordinates. The final decision making, however, lies with the managers. The owners make the final decision but will also consider the contributions of the team members. The managers (influenced by the owner) will incorporate and consider the opinions and advice from the team members that is most suitable for that instance. The team members are usually aware of what needs to be done and communicating to top leaders enables the implementation of the best strategies. The approach initially is successful through leadership communicating their problem to the team, accepting, and assessing the ideas of the team, and deciding on a final solution. Next, the administration decides on a final solution. Once a final resolution is chosen, the process begins to accomplish the desired goals. The solution is communicated to the team and a process for implementing a successful solution is started.

Human beings need a definite system of directing and controlling to help them function and provide guidance to achieve the goals of an organization. According to Nawaz and Khan (2016), contingency, situational, and participative leadership theories were developed to help operationalize methods of managing human beings in the workplace to achieve the best organizational results. Management theories vary and include different approaches to the handling of situations in the workplace. Processes within systems may need to be reduced to more understandable and accomplishable goals to be successful.

Market Segmentation

Restaurant leaders see market segmentation as a way of managing the ever-growing problem of food waste in restaurants. Market segmentation is the aggregation of prospective buyers into groups or segments having common needs and responding to a similar marketing action (Daries Ramon et al., 2018). Psychographics and demographics are used in market segmentation. Psychographics segmentation divides the market into groups based on certain characteristics such as social class, personality, and lifestyle (Becherer et al., 1977). Market segmentation links these groups to products or processes being offered or sold (Ezeh, 2017). The focus should be on the conduct that relates to the actual buying of the product such as the process of decreasing food waste. Ezeh (2017) further stated that because people are classified in the same segment, they may not behave the same. Demographic segmentation focuses on five segments: ethnicity, age, gender, income, religion, and family (Ezeh, 2017). Researchers have shown that there are different ways to segment a market, which means there is no correct way (Becherer et al., 1977).

Market segmenting in restaurants focuses on developing niche markets to aid in the process of specialization of the products among restaurants in the food service industry. Market segmentation can be used to accomplish certain processes such as implementing strategies to decrease food waste. Restaurant owners can address food waste to ensure that the correct inventory is ordered within the restaurant, thereby ensuring the excess amount of food waste is decreased. The market niche is the segment of the larger market defined by the unique needs, preferences, or identities that make it different from the rest of the market. With coordinated efforts, market segmentation was applied, and the results monitored (Aamir et al, 2018). Market segmentation occurs in several forms including price segmentation, geographical segmentation, and occasion-based segmentation (Carvache-Franco et al., 2020).

Price segmentation entails the tailoring of restaurants to offer food by price point. This type of market segmentation aims at attracting customers based on their ability to afford the products that are sold in the individual restaurants. With coordinated efforts, price segmentation was applied by different stakeholders in the restaurant industry, and the results were monitored by restaurant leaders and owners (Aamir et al, 2018). Some restaurants may offer foods that are relatively expensive, attracting a category of individuals who will specifically visit these places because they can afford these products (Carvache-Franco et al., 2020).

By contrast, some restaurants will offer food that is sold at an inexpensive price and will attract those who earn less and therefore have little to spend on food. Price segmentation is a way of dealing with food waste because it eliminates the problems of restaurants having to retain foods that they cooked and failed to sell by selling food to different customers at different prices (Song & Kim, 2019). The price depends on the type of food. Al-Tit (2015), however, refuted the price segmentation strategy claiming that food quality matters and segmenting markets may not be a solution if the food quality is not good. Retained foods that have already been cooked always go to waste because precooked foods cannot be resold because of legal and health requirements. In most cases, higher-priced foods often remain unsold and therefore create losses (Al-Tit, 2015).

Geographical market segmentation entails restaurants making and selling foods according to the preference of the target population in a certain place (Aamir et al., 2018). Culture, religion, and the way of life of a group of individuals are common in the process of market segmentation as it pertains to the target population. Individuals who live in a certain place tend to prefer particular foods. For instance, individuals who live in coastal areas often eat seafood. Geographical market segmentation focuses on preparing and cooking foods that are suitable for a given location to avoid loss in the form of food waste (Aamir et al., 2018). Food waste problems often arise when restaurants fail to identify the most sought-after cuisines and menus, failing to meet the needs and demands of their targeted segments. Additionally, when a restaurant prepares regionally unfamiliar foods, the demand is low and leads to retention, which eventually may become a waste of food. This, for instance, occurs when a restaurant located in a rural setting prepares foreign cuisines from other countries; the occupants of that region may not want to try new foods and this may lead the market to a loss (Aamir et al., 2018).

Occasion-based segmentation is the marketing approach of specializing according to events and the functions in a certain place at a particular time. This type of segmentation is not always applicable because occasions may be rare. Restaurant leaders and managers are encouraged to offer foods that suit occasions in a region. This entails looking at both the potential number of individuals who may attend events and want to buy foods and the types of foods that may be on demand based on the attendants. The specialization helps to maximize the profits through the provision of the foods that many people are most likely to purchase (Aamir et al., 2018). Prior surveys of the events around, for instance, graduation ceremonies, enables the restaurants to estimate the number of the individuals who may be customers, thereby informing managers to maintain inventory levels required to prepare their menus on that day. Price may also be an important focus and help decrease food waste.

Price, geographical, and occasion segmentation are contributing factors in decreasing food waste. By controlling these factors, owners have the ability to have and maintain market segmentation as it pertains to customers, food, competition, and availability of foods. As a result, food waste may be decreased, and profits increased.

Price Reduction

Price reduction increases the rate of purchase by using a method to minimize food waste in restaurants (Aschemann-Witzel et al., 2017). Food waste occurs when the food that is cooked or stored is lost through expiry or contamination. Most food waste occurs as a result of the expiry date being reached before the food is consumed or sold to customers (Aschemann-Witzel et al., 2017). In most cases, it is easy to tell when the expiry of food is approaching, and it is usually easy and appropriate to take measures to avoid the probability of food becoming waste. Foods that deteriorate and develop unpleasant odors, tastes, and textures are spoiled (U.S. Department of Agriculture [USDA], 2017). Spoilage bacteria can cause fruits and vegetables to get mushy or slimy or meat to create a foul odor (U.S. Department of Agriculture [USDA], 2017). According to Aschemann-Witzel et al. (2017), the most common way of handling foods with an approaching expiry is to lower prices to attract more customers at a higher frequency. The responsible restaurant safety and procedures personnel need to determine that the food that will possibly be fed to the customers is fit for consumption and does not present any health hazards.

The best approach to the mitigation of food being sold and served too close to its expiration date is to put the foods with the earliest expiration dates on offer first for the public to purchase (Aschemann-Witzel et al., 2017). Offers come at reduced prices for the same number of foods that are usually priced higher or the doubling of foods for the same price. The restaurant first assesses the best offers which can ensure that they can still make a slight profit or maintain the selling price to avoid losses. The restaurant’s marketing team makes the public aware of what is being offered by the restaurant. The foods that are the closest to an expiration date are often sold first. In some cases, it is not exactly the foods or drinks that near an expiry, but the ingredients. However, the approach is the same; the restaurants focus on the foods that utilize the ingredients in question or are approaching the specific expiration date. Reduced prices are always attractive, especially when the products have typically been admirable but expensive; this approach will attract more buyers and contribute to the prevention of foods being wasted. Al-Tit (2015) criticized this procedure, claiming that reduced prices indicate poor quality goods, and many customers are familiar with this method used in the restaurant business. Customers often question the reduction of prices.

Preservation Methods

Preservation has been a major investment used to avoid food waste in restaurants. Preservation is the employment of necessary measures that ensure that food lasts longer to avoid spoilage for as long as possible. According to Eriksson and Hansson (2016), preservation exists in many forms and depends largely on the types of foods in question. Some ingredients used in restaurants are dry, and the most suitable methods for preserving them is simply to keep them dry. Most restaurants prepare food that needs to be eaten within a few hours after preparation. However, certain foods can last for a significant number of hours when not contaminated, and preservation can be used to extend their lasting until the next period when the food is sold; for instance, food cooked in the morning can be sold up to midnight when kept under favorable conditions.

The most common approach that has been used in restaurants and food industries for preserving food is the lowering of temperatures (Eriksson & Hansson, 2016). Because it has long been proven that bacteria and other microorganisms that result in food spoilage thrive in relatively high temperatures, the medium temperatures cannot be tolerated in restaurants. Leaving food out too long at room temperature can cause bacteria such as Staphylococcus aureus, Salmonella Enteritidis, Escherichia coli, and Campylobacter to grow to hazardous levels, which can cause extreme illnesses. Bacteria multiply in temperatures between 40 degrees Fahrenheit and 140 degrees Fahrenheit and can double that growth in less than 20 minutes (U.S. Department of Agriculture [USDA], 2017). This range of temperature is called the danger zone. Therefore, it is best to keep hot foods above 140 degrees Fahrenheit and cold foods below 40 degrees Fahrenheit (U.S. Department of Agriculture [USDA], 2017). Due to kitchens being hot and open to fires that are used for cooking, roasting, and steaming, the food storage areas should be relatively far from the kitchen to avoid creating thriving conditions for microorganisms to grow and multiply, which may increase the opportunity for food spoilage. Achieving low temperatures to store food and ingredients is a milestone for restaurants that aim to reduce food waste (Eriksson & Hansson, 2016). Jeremiah (2019) argued against the preservation foods, questioning how low temperatures affect the taste and nutritional alteration of the foods preserved in this manner. Nevertheless, the low-temperature method remains the most widely used approach in restaurants and other food processing centers.

Commercial refrigerators exist in nearly all restaurants and food outlets to help keep food from spoiling. The lowered temperatures prevent microorganism growth and multiplication; this is because the cooler conditions cannot support life for these pathogens (Eriksson & Hansson, 2015). It is economical to buy goods and raw materials in bulk as it saves money and time due to quantity discounts from suppliers. Because products are sold wholesale and in large amounts, preserving the extra food is mandatory to avoid waste. Large amounts of food would be disposed of due to spoilage; however, many restaurants across the world use low temperatures to mitigate food waste and minimize loss. Preservation maximizes profits through the elimination of food waste probabilities; this is also because purchases in bulk yield higher profits when there is a maximum output from the inputs invested in the restaurants.

Recycling and Reuse of Waste

Recycling of food waste to provide energy has been a growing trend to curb the food waste in restaurants. Due to the growing population in the world, and especially in developing countries, there is a higher demand for food production. The rate of food production is directly proportional to the rate of food waste that is generated and dumped yearly, and in 10 years, it has been estimated that the amount of food waste will double (Giordano, 2020). Many problems come with food waste, such as an increase of poverty and environmental implications. For example, landfills used shrink yearly; in addition, there are health hazards that may arise due to the large wastes that are being dumped. There has therefore been a need to have a reliable solution to the growing burden of waste (Giordano, 2020).

Most of the waste from restaurants is organic and can be recycled to produce additional economic value through the production of energy that can be sold or even used in restaurants (Carmona-Cabello et al., 2018). The recycling process entails the collection of food waste that is precooked and left over after people have eaten in the restaurants. Chiu et al. (2015) added that the food waste components are usually in a form of different compositions including carbohydrates, proteins, lipids, and traces of inorganic materials. The waste may be subjected to anaerobic digestion, which involves three processes: enzymatic hydrolysis, acid formation, and gas production. The biological process takes place in phases. The first step entails the breaking down of large molecules to small pieces that are biodegradable (Chiu et al., 2015). The molecules need to be small enough to pass through the cell membranes. The processes in this step can be slow or fast depending on several factors, such as the PH, the temperature, or even the catalysts that influence the reactions.

In the second stage of acid formation, the hydraulic products are fermented into volatile fatty acids and the gases ammonia, hydrogen, and carbon dioxide. The anaerobic bacteria present in this phase use oxygen and carbon dioxide to create suitable and optimum conditions for methanogenesis (Chiu et al., 2015). Some elements such as hydrogen, oxygen, and acetate can be used directly to facilitate the methane production process; however, some components such as propionate need to undergo further degradation to produce oxygen and hydrogen, which will be eventually used for methane production. The acetogenesis process follows, where the acids formed are converted into acetates. In the last step of this anaerobic process, methane is produced from the fermentation of acetic acid and or the reduction of carbon dioxide.

Energy production in the form of methane and biogas has been the solution for using waste creatively in most parts of the world to manage the problem of food waste and energy shortages in many restaurants and hospitality organizations (Carmona-Cabello et al., 2018). The process has not only been used as a way of minimizing the waste taking up space and causing pollution but also as a way of increasing the production of revenue through the production of energy. Warshawsky (2019) recognized that many challenges may come with this method or approach of dealing with the waste, but it is a great solution because the results are beneficial in several ways. There is generation of revenue through the energy produced and the environment is left cleaner at the end of the process. Methane production through biowaste is not highly profitable because the process involves recycling, which is costly. The process may not be very profitable, but the process is useful because it aids in the elimination of waste that would have caused hazards to people and the environment (Carmona-Cabello et al., 2018). Despite owners' best efforts, there will always be waste. The goal is to minimize the waste as much as possible while working toward total eradication of food waste (Warshawsky, 2019).

As a way of food waste management, valorization of the waste has been adopted to produce energy and contribute to a circular economy (Carmona-Cabello et al., 2018). The process of recycling has been adopted to obtain the lipid fraction from the food stuff and the conversion in biofuel to produce biodiesel that meets European biodiesel standards. For the purpose of recycling the solid food waste from restaurants, food waste from restaurants from different places are collected and tested. The samples from different restaurants yielded a difference in the oil fatty acid composition but a similarity in the levels of fatty acids methyl esters. Through further chemical processes, biodiesel is produced that meets the standards of the European biodiesel standards. Although further tests on the fuel was needed to establish the reliability and the effectiveness of the fuel, it is evident that the method of waste management is efficient and worthy of resources (Carmona-Cabello et al., 2018). With further studies and measures, large scale recycling of waste to produce biodiesel not only mitigates environmental degradation but also provides an economic benefit through biodiesel generation. The restaurants that produce foods in large scale and therefore the waste in large amounts can invest in the recycling process for the purpose of energy generation. The collaboration of several restaurants in the past has been beneficial because of the pooling of resources as well as the effective method of large-scale waste management.

The other method of recycling is the direct reuse of food waste locally. There are several forms of waste, and different components can be used selectively to provide different uses and benefits from food waste. Vegetable waste is purely organic and can be used in the formation of local manures in farms to produce nourishing components for plants (Salemadeeb et al., 2017). Along with their necessary components, the vegetable wastes are taken through the process of decomposition where they provide the necessary nutrients for the plants in green houses or even in noncommercial farms where individuals choose to carry out farming for local consumption. The reuse process for the manufacture of organic fertilizers has not been commonly adopted because of the challenge of the mixture of food waste and the nature that is mostly available (Brancoli et al., 2017). According to Silvennoinen et al. (2015), the recycling process is challenging as food wastes are commonly mixed, as the vegetables, carbohydrates, lipids, and the inorganic wastes are placed in the same places. Less vegetable waste, such as those parts of ingredients that are not cooked or vegetables that wither before use, is typically obtained. The adoption of reuse rather than dumping has greatly aided in the management of food waste from restaurants.

Some of the food waste from restaurants are used for animal feeds (Salemadeeb et al., 2017). Some parts are directly bought and used to feed animals. Over many years several parts of the world have often obtained food for their animals from the waste that comes from restaurants. For instance, many people purchase leftovers of bones and protein products for their dogs. Specifically, bones are in high demand. The practice has not only relieved the hotels of large wastes resulting from food leftovers, but they gain a fee for selling the wastes to those who are interested in the leftovers. Mourads (2016) explained that vegetable contents of waste such as potato peels and kale have been used for feeding herbivorous animals such as domesticated buffalos and cows. Although some people do not consider the practice acceptable, many people in different parts of the world have adopted the process. Mourads (2016) argued that most people in Africa view the leftover as nutritious and suitable for domesticated dogs. Some people prefer to buy foodstuff that is specifically tailored for the animals rather than using leftovers and spoiled foods.

Recycling and reuse of food is a process that can reduce food waste. The recycling of food can be used to produce energy in the form of methane, biogas, and biodiesel. Animal feed is a form of the reuse of food as purchased left over foods are given to animals for food. The processes pertaining to recycling and reuse of food may reduce food waste and increase profits.

Market Analysis

Market analysis is an effective preventive measure that has been taken by the restaurants to ensure less waste is generated from their business (Clowes et al., 2018). Market analysis is the comprehensive process by which suppliers or sellers assess the environment to determine the nature of products and services in demand (Clowes et al., 2018). The population of people who will use the services or products is determined in this process. Market analysis may include information regarding the number of products to stock; this helps to eliminate problems associated with understocking or overstocking of the products.

Market analysis has been used as a method of waste management through the assessment of the size of the population that the restaurant is to serve (Clowes et al., 2018). Restaurants in sparsely populated areas are most likely to receive several customers as compared to restaurants in areas with fewer populations. The high population provides customers who may want to eat in restaurants. Urban settings are more likely to attend to more customers than restaurants that are in rural areas. The number of restaurants in a certain place can also determine the number of the customers. The analysis based on populations helps prevent food waste through guiding the hotel management on the number of foods that the restaurant should stock or use at a certain period (Warshawsky, 2019). A reasonable amount of food should be made following the results of the analysis carried out; this will help to minimize the food waste that is seen through spoilage (Clowes et al., 2018). Although waste is inevitable, the goal is to minimize the waste.

Market analysis focuses on waste reduction through the demographic analysis of the populations (Sakaguchi et al., 2018). Some foods may be common for certain cultures and groups of people based on age, religion, or even occupation. Certain foods will be common and bought by a group of people, while others will prefer other food types. For instance, a population made up of young people who are in institutions of higher learning will probably prefer restaurants that serve fast foods. Papargyropoulou et al. (2016) recommended that to avoid food waste, other types of food such as traditionally made stews and starches should be minimized; this is because based on the population in the area, there would be less preference for such food. The market analysis based on the demographics has been seen as an efficient method of managing food waste. The approach is preventive and has provided tremendous results for restaurants that have applied it (Hsiangting & Tun-min, 2018).

The culture and the practices of the target population, environment, and demographics will influence the restaurants in the areas of specialization and investment. Prior knowledge of the likes and the possible preference of the customers that the business targets have been used as a guiding tool to enable the restaurants to understand the type and amount of food they should sell. Understanding the target population reduces the food wastage problem by having knowledge of the probability of the food being thrown out or spoiling due to spoilage.

Policies on Food Safety and Food Waste

Policies and regulations that emphasize food waste prevention in restaurants are developed by the effective ownership strategies that are in place (Pak, Potts & Sakaguchi, 2018). Inventory management ensures that excessive amounts of food are addressed from the onset with only required amounts ordered. Additionally, the excess food waste may be transformed into animal feed that are consumed, which will minimize the total amount of waste that is to be managed. Restaurant owners have been able to implement principles that regulate and guide the work of the restaurant employees. The provisions of Occupational Health and Safety (OSHA) and Food and Drug Authority (FDA) establish goals and how to tailor the workers and the employers to provide the necessary services that the managers desire to see in the business (Dorn, Liechti & Stöckli, 2018)). Nguyen (2018) countered the effect of policies claiming that they may not yield the desired results without implementation and evaluation. Continuous process improvement should be a goal that most leaders should focus on to achieve the best results in the restaurants (Nguyen, 2018). Process maps are a crucial quality improvement tool that can be useful in visualizing how food waste, and its complex processes, can be decreased. Process mapping provides insight into systems and processes that improve interventions. It helps determine the step-by-step flow of the process, its timing, handoffs, and identifying outputs that can be visualized, measured, and studied in decreasing food waste. Due to the complexity of food waste, process mapping can be a foundational element of reducing the food waste process and increasing quality improvement (De Moraes et al., 2020). Different restaurant owners may have various means of quality improvement and guiding factors that enable them to achieve best practices. Based on the provisions of FDA and OSHA, health, and safety guidelines on the management of food waste can be employed.

Policies and legal regulations from the U.S. government and their regulatory agencies have been applied to help manage the food waste problem in several parts of the country (Clowes et al., 2018). Policies are a set of principles or regulations that govern a given institution or operations in each field. The regulations imposed on restaurants have been intended to reduce the amount of food waste that is generated from the business during their daily operations. The applications yield few results because there are no measurable ways of assessing the effectiveness of the policies that are applied to restaurants to regulate the problems of food waste. There is food insecurity in most parts of the world, yet at the same time there is also an increasingly high amount of food waste. The regulations are meant to increase food security through the reduction of wastage (Clowes et al., 2018).

Elaborate policies exist and govern the amount and the nature of foods that restaurants can prepare and sell. The authorities are responsible for enforcing these regulations and determining the eligibility and the abilities of a certain restaurant to provide certain products to the public (Clowes et al., 2018). The government will often regulate the amount of foods that restaurants should not exceed; this is rarely done directly but occurs through the waste that the business should generate. The reasons for the regulations are for both environmental safety measures as well as for the economic purposes of food security issues. These policies and procedures assist the government in reducing or even eliminating harmful substances that can be detrimental to the health of individuals and the public at large (Mourad, 2018). There is a collaborative effort between private sectors, public sectors, and global regulatory bodies to ensure there are sound reforms that govern food storage and management in order to develop sound reforms that collectively prevent and eradicate the problem of food waste. The policies have worked through strict laws on food wastage and loss through avoidable means; the aim is to promote food security and increase access to food by the poor populations, especially in developing countries.

Partnerships

Partnerships have been used in the past by large companies to prevent food waste while also trying to attract customers from all walks of life (Priefer et al., 2016). Most spoilage occurs because of the storage of surplus foods and ingredients, as well as retaining excess foods that have been cooked in restaurants. Large companies have, in the past, volunteered to give food to organizations when the organizations have events for public relations purposes. Partnership with large companies enables restaurant owners to provide food at a lower price but in large quantities. This will help restaurant staff to get rid of the food that has been stored in bulk while still making a reasonable profit. Partnerships widen the market of restaurants and sell them to other customers who did not initially know the existence of the restaurants business and their foodstuffs (Papargyropoulou et al., 2016). There are great benefits of partnering with other restaurants and other businesses, which include but are not limited to the acquisition of new customers and the high demand for their foods among populations that were not initially aware of the restaurants (Yang et al., 2018). The greater the menu offerings, the less likely there is to be food spoilage.

Most restaurants that have partnered in the past with large institutions and have created a customer relationship no longer have the need to attract the few customers around them to be viable in the market. After attaining a partnership and trust from the people who depend on the supplies of the restaurant, it is easy to determine the size of the products and the stock to obtain to complete orders and satisfy the customers (Priefer et al., 2016). Having prior knowledge has been tremendously helpful to large restaurants to prevent food spoilage and consequently food turning to waste. Strong supplier partnerships and a well-defined market increase profitability and reduce the problem of food waste. Although obtaining partnerships is difficult for most businesses, identifying a specific market should be the goal of every huge restaurant that aims to reduce losses through food waste.

The partnership process is known as the process of defining market scope and specialization for the greater benefit of both the organizations that are in partnership and have an agreement purchase (Priefer et al., 2016). Parry et al. (2015) refuted partnership strategy and argued that very few restaurants can achieve this. Profitability is also increased through the reduction of food waste, having a well-defined amount and size of a required food package. In such situations, those who have obtained tenders rarely can increase their production beyond a certain level to make profits (Priefer et al., 2016). The specifications have been guiding tools that limit the processing of extra foods that lead to spoilage because of the failure of anticipated customers to purchase (Priefer et al., 2016). With partnerships, overstocking of foods seldom happens because those who are targeted have specified their requirements. This gives time to their suppliers to identify what they need, the specifications required in terms of amount, and the types of foods they need to acquire from the market. In addition to food waste, financial losses have also occurred due to food expiring before being cooked or prepared.

Developing partnerships in relationships and knowledge as it pertains to customers desires for certain foods helps restauranteurs address problems related to spoilage, storage, and overstocking. This is a great strategy that may help in decreasing food waste and increasing profits.

Continuous Quality and Standards Improvements

Efforts to constantly improve the standards of products within restaurants are a step in the reduction of food waste. Customers who have been satisfied with restaurant services tend be loyal and bring other individuals to taste the entrees as well (Russell et al., 2017). However, poor service and poor products may decrease customers sales. Customers that have witnessed terrible service may not want to visit that restaurant again. Restaurants who have focused on the needs of the customers and ways of improving their foods and services may exhaust their products because of the high number of customers (Russell et al., 2017). Food rarely remains because the customers demand the meals. The secret to customer satisfaction and repeat business is continuous process improvement and benchmarking business processes to the best in the business. New restaurants need to emulate best practices and borrow their skills and strategies to also gain from the market.

Careful attention to detail and attending to feedback from customers is also important because tailoring of services to meet their needs shows the business values their customers.

Having repeat customers who are loyal does not slow the selling of products and foodstuff of the restaurants. There will always be high demand for foods from high-quality restaurants because of word-of-mouth advertising (Parry et al., 2018). Most food spoilage results from the inability of restaurants to sell foods that they have cooked. The food therefore gets contaminated because of long stay and the high temperatures of kitchens. Constant quality improvement has not always solved the problem of immense food wastage but has been proven to be a possible solution to high food waste, especially in small and upcoming restaurants (Russell et al., 2017).

Ahmed (2019) noted that sometimes customers stop being patrons of restaurants due to declining service and food quality. Different customers have different preferences in food and the way they like to be approached and addressed. Every customer deserves respect especially in the way restaurants communicate with them and respond to their queries. According to Monzon (2015), customers who have felt devalued in the past tend to seek new places where they can purchase the same types of foods at similar price points and be served with courtesy.

Timing between the order and delivery of food may often push people away because they feel their time has been wasted (Ulmeret al., 2021). The language that restaurant workers use with customers also determined if they would come back or go to seek better services in different locations. When the business loses customers to competitors, they may fail to recognize the need to reduce the number of foods that are cooked per day (Ulmeret al., 2021). Food that is intended for lost customers is often lost through spoilage because of the excess that is not preserved (Russell et al., 2017). Earlier researchers have shown that treatment of customers by the restaurant's personnel contributes to the amount of food waste that is generated and disposed of by restaurants and other food businesses, such as hotels.

Quality and standards are components in decreasing food waste. Restaurants understand the importance of customer loyalty, timing of completing food orders, customer respect and customer communication as it pertains to decreasing food waste. A customer who is happy and respected by a particular restaurant may also be loyal to the restaurant which may decrease waste and increase profits.

Investments in Make to Order and Make to Stock Approaches

Investments in both make to order and make to stock approaches in the food industry have been applied in manufacturing sectors rather than any other areas of business; however, the approach has proven to produce immediate and positive results. Several restaurants have witnessed high food waste because of excess food production that results in the supply of food being more than the demand (Pak et al., 2018). Most foods are perishable and may not be preserved under all circumstances because of their delicate nature. The preservation methods also vary from food to food, while others have no possibility of being preserved in any manner. Making too much food without the knowledge of what the demand is increases the probability of foods becoming spoiled, leading to food waste (Silvennoinen et al., 2015). It has therefore been noted that foods that can be made within a short period of time should be made when a customer order. With time allowance, it is safer and more reliable to make foods instantly whenever there is an order rather than cooking large quantities and failing to sell the entire food package (Principato et al., 2018). Investments of both make to order and make to stock approach are effective and restaurant owners save on food waste and maximize their profits (Principato et al., 2018). Not all food can be made upon order; however, the amount can be controlled to ensure that the foods are not made in excess.

The make to stock foods should only be applied to foods with a longer shelf life. Investments in both make to order and make to stock approach is also applicable to the foods that take too long to cook, such that the customer cannot wait for the chef to make it after an order has been placed. The only caution is the amount of food and the storage conditions of the cooked meals. From trends in restaurants, the management has often taken caution to ensure that the foods are not made in excess and the storage conditions of the cooked meals are appropriate and in accordance with the public and safety health requirements (Pak et al., 2018). From those centers that have applied the two methods, there have been improvements in their service delivery and the outcome of the business. Less food is turned into waste, and this ensures that the business gathers enough profit.

Monitoring and Measurement of Food Waste

Statistical analysis of food waste has been used in the past as a method of waste management. Silvennoinen et al. (2015) recommended that the amount of waste should be periodically recorded to determine the amount of food that was lost due to spoilage the food that has been lost as leftovers from the customers who eat at restaurants. Spoilage of food in stores usually results from the inattention paid to expiry dates, whereby the company invests in foodstuffs and ingredients with expiry dates that are not far away (Silvennoinen, et al., 2015). In addition, it gets worse when the food nearing expiry dates are bought in bulk. From the leftovers, it should be easy to assess the types of food that most people do not actually eat. There are parts of the meals that cannot be eaten, such as bones and cartilage. However, responsible personnel in the restaurants who have been charged with the duty should analyze the waste to determine underutilized parts of the meal. From a survey conducted to curb the food waste problem, it was discovered that many young people do not like salads. There are several types of salads that can be served along with meals; however, some may be thrown away after being served (Silvennoinen et al., 2015).

The statistical analysis method was adopted by many food businesses, such as hotels and restaurants, to measure and track the waste that resulted from the foods they stocked and served to customers. Statistical analysis of the waste and its components informed the restaurant management what the public would likely prefer or not prefer (Silvennoinen et al., 2015). The statistical analysis of waste products brought information to the attention of restaurant management (Principato et al., 2018). From this statistical approach, it has been helpful to analyze waste products to determine where restaurants have the most loss, which consequently informs restaurants of the changes that need to take place to pave the way for a smooth running and functional restaurant (Dorn, Liechti & Stöckli, 2018).

The amount of waste and the makeup of its components indicate what is not preferred. The move to correct is what mattered most, as that is what would provide the desired change of reduced waste from spoilage and leftovers (Russell et al., 2017). It is easy to realize the amount of food being consumed per day in a certain place. Statistical analysis identifies exceptions. For instance, there are different levels of demand on different days such as weekends and holidays where food demand may be higher or lower depending on the region. This forecast is helpful in the determination and prediction of future demands for food. Forecasting prevents cooking in excess, which may lead to food dumping because of spoilage. This may be very helpful in reduction of food waste and increase in profits.

Measuring Delivery Quality Against the Orders Made

Measuring delivery quality against the orders made is a waste management practice that is applied once restaurants have accumulated waste. Measuring delivery quality against the orders made is a management practice in which the prevention of food from turning to waste before the actual value is gained has been viewed as a practical method of preventing the occurrence of waste in restaurants (Pak et al., 2018). There is a need to keep track of records of products of all orders made to restaurants. Procurement departments often are responsible for the measurement of orders that have been delivered against those that have been made (Monzom, 2017). Delivery companies and the individuals who are given tenders have taken advantage of the orders made in bulk to deliver substandard products. The products often do not last as long as expected and may even lead to the spoilage of other products through the spread of microorganisms. A clear method of measuring the quality of orders against those that have been ordered has been used in the past as a method to prevent food waste even before the use of the product and the food ingredients.

Preventing food from turning to waste may be accomplished in several ways (Papargyropoulou et al., 2016). First, the range of expiry dates needs to be within the set limits that were explained during the delivery process. The condition of the food products needs to meet the minimal requirements in all aesthetic aspects. There should be no alterations or deviations from the standards that have been set and agreed upon by the departments within the restaurants that have authority and charge over the food (Principato et al., 2018). The standards are measured in terms of color, whereby the ordered products should not be different from the universally accepted colors for those specific products, unless otherwise explained comprehensively. The odor of food and products also determines the freshness and their ability to last for the anticipated periods. Some appearances of the products reveal several factors that can show the quality and their ability to last and not spoil before the use of product (Principato et al., 2018).

To prevent early spoilage and huge amounts of food waste from the restaurants, the practice of assessing the delivered products against the orders made has been applied to reduce the probability of paying for poor quality foods and products. Without the careful assessment of the products acquired from suppliers, it is possible to buy and settle for goods that contribute to the high burden of food waste. The preventive method is reliable and has reduced the statics of spoiled foods before they are even used. Although, spoilage is inevitable in some cases, it has been possible to prevent spoilage (Parry et al., 2018). Restaurants can always reject products that do not meet their desired standards and strictly determine the nature of the deliveries they receive. Measuring delivery quality against the orders made enables the business to pay for the actual value of the products without encountering losses in terms of food waste and non-quality food probabilities.

Stock Rotation Practices

Stock rotation practices have been employed in restaurants as a preventive food spoilage method that reduces the potential for food wastes. Stock rotation is the process of changing storage methods and configurations in warehouses and stores in restaurants. The most essential part of the stock rotation is the shifting of old products to be at an accessible place where the users in the kitchen will first pick the old products before using the new arrivals (Pak et al., 2018). Pirani and Arafat (2016) argued that stock rotation has been used to achieve several benefits and for prevention aspects. In an unclean, poorly ventilated storage space the probability of food spoilage grows exponentially. Several times stores have been breeding places for pathogens and microorganisms that attack food and lead to spoilage. In some extreme situations, spoilage extends to a large group of products, which can lead to massive food wastes.

Preventive measures in the form of stock rotation are a waste management option to mitigate possible waste. The practice has often helped restaurants to discover gaps and possible problems in their inventory stocking methods. For instance, with the constant change of stores and food locations, water pipes that leak have been noticed and repaired, which has helped prevent further damage in the food stores (Parry et al., 2018). The practice has been proven to bring several benefits; although the process is timeconsuming and energy-consuming, the effort and the resources are worth the investment. The practice also prevents obsolescence and the failure of products to be used; sometimes some of the products stored can be noticed before their expiry dates have reached. Those restaurants that have applied these preventive methods have done well because they witnessed less food spoilage in their stores and consequently reduced food waste (Parry et al., 2018).

Training of Restaurant Employees

Training restaurant employees about food handling and safety procedures has proven to help mitigate the food waste problems in restaurants. The employees who pick the right orders and specifications from their customers have less probability of food rejections. Food once served cannot be reserved for another person because it looks contaminated and may not meet the specifications of any other person who is ordering in the restaurant. Several required skills for restaurant staff are needed, which importantly include listening and etiquette. Principato et al. (2018) insisted that managers should ensure training also instills the necessary skills for the workers to prevent the possibilities of food loss through contamination and spillage in the kitchens (Berglund, 2015). There is also training on portion control where the restaurant workers learn that the food served to customers should not be so little such that the customer feels the money they have paid is undervalued (Pirani & Arafat, 2016). Serving food to the customer that overfills the plate has a potential for food loss and waste. Restaurant workers must be sure to determine optimal food portions to find the exact customer needs to avoid food being left on the plates (Principato et al., 2018). The assessment entails determining exactly the type of additional foods that are often served with the main meals. Principato et al. (2018) and Pirani and Arafat (2016) argued that people have different preferences when it comes to fruits and vegetables that are served along with other meals; the training is important for enabling the employees to navigate such preferences. Engaging customers and letting them understand the options help to reduce the amount of waste that is generated through leftovers (Sakaguchi et al., 2018). Training has been used as a method of mitigation as well as management of the waste that have occurred already. Employees should understand the potential areas where they can minimize food waste, which may entail the division of kitchen portions to prevent contamination of foods through mixing. For instance, where chicken is prepared should be far from the areas where beef is cut and cooked (Papargyropoulou et al., 2016). In addressing wastes such as peelings that are obtained before foods are cooked, certain training has been used to help manage and arrange this waste in a controlled manner that does not pose any significant contamination problem to other foods that have been stored in the restaurant premises.

Summary

It is not possible to eliminate food waste, but through leadership, management and prevention, the food waste in restaurants can be comprehensively managed to reduce and eliminate the problems that come with food waste, such as environmental pollution, health hazards, food insecurity, and losses in the market. The problem of food waste is increasingly growing, and this has captured the attention from different concerned governments and organizations. The move to manage food waste has been diversified and tailored to ensure that the process brings immense benefits to businesses that run restaurants. Food waste management is meant to ensure that food waste management is another method of increasing profits through the management of generated waste and constantly working toward decreasing the waste generated. The need and the increased attention to food waste benefit profitability of restaurant owners through generation and maintenance of profits. The move also is for the economic benefit to increase the profits through the waste management options that benefit them and prevention of losses through their foods turning to waste when they would have made immense profits.

Transition

Section 1 included the problem statement and the purpose statement, centered on the need for restaurant owners to develop strategies that may decrease food waste. I stated in the nature of the study the need for qualitative single case research based on the characteristics of the study. In the literature review, scholarly knowledge and information focused on a conceptual framework. The stakeholder theory, is an explanation of the significance of food waste strategies that restaurant owners use to maintain or increase profits, was included in Section 1. The outcome of the literature review provides scholarly information on the study problem. Section 2 includes the purpose statement, the role of the researcher, participants, research method and design, population and sampling, data collection instruments and techniques, organizational techniques, data analysis, and reliability and validity. The findings of the study, future research, and recommendations are presented in Section 3.

Section 2: The Project

The protocol used in this study consists of strategies that business owners can employ to reduce food waste in restaurants. Section 2 addresses the purpose statement, the role of the researcher, the participants, the research methods and design, the population, and the sampling method. In addition, Section 2 outlines ethical considerations in the research, data collection, data-collection techniques, instruments, data analysis, reliability, and the validity of the research.

Purpose Statement

The purpose of this qualitative single case study was to explore food waste strategies used by restaurant owners to maintain or increase profit. The target population consisted of five restaurant owners who were members of the Restaurant Association of Maryland (RAM) and had demonstrated success at reducing food waste in their operations. The restaurants included in this study generated no more than $700,000.00 in revenue annually and had five to 20 employees. The implications for positive social change could include a decreased amount of food waste within restaurants, thus increasing knowledge of food preparation, storage, and nutritional portions that can also result in an increase of profits and an increase of availability of jobs, which decreases unemployment within the community.

Role of the Researcher

In qualitative research, the researcher is the data collection instrument. I served as the primary instrument for data collection in this study. The researcher’s background, experience, age, and education are all apart of how the research is conducted and or perceived (Zhang & Liu, 2018). In my role as the researcher, I obtained information from five restaurant owners exploring how strategies are used within restaurants to decrease waste, which resulted in an increase in profits. The interviews were semistructured. The interviews were obtained in person and face-to-face. All participants wore masks and kept a 6-foot distance as per the Centers for Disease Control (CDC) COVID guidelines.

It is the role of the researcher to decrease or mitigate bias to avoid using a personal lens in which to interpret data (Zhang & Liu, 2018). Triangulation in qualitative research can be utilized as a strategy in achieving the objectives, which are to ensure credibility, reliability, and greater scientific accuracy in its achievement (Natow, 2020). To mitigate bias, I applied and maintained standards while collecting, and analyzing data.

I also ensured reflexivity, which involved disclosing any prior assumptions, beliefs, and biases. Reflective inquiry occurs at the beginning of the research and allows the researcher to understand how to position themselves in relation to the subject (Karagiozis, 2018). Researchers should always proceed with integrity and professional honor; consequently, I worked to protect the participants' interests and remained within the standards of the law, always maintaining safety (Meyrick, 2006).

I have worked on a global level as a first responder, defender, and leader in incredibly challenging situations. I have seen the effects of food-insecure communities, globally, on a firsthand basis. I have always wanted to eliminate or at least reduce food waste challenges. It has been my mission to help and encourage food secure communities as it relates to waste. I did not have a relationship with the participants in this study as I did not know any of them on a personal or professional level.

My role as a researcher, as it pertains to the Belmont Report (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979), was to support the purpose of identifying and upholding basic ethical principles that involve research dealing with human subjects. The participants in this research were treated with respect, professionalism, and beneficence. In addition, the participants were treated with justice; accordingly, all risks and benefits were explained so the participants were able to fully understand their participation in the study and what it entailed.

As the researcher, I ensured the highest ethical standards by obtaining a consent form, presenting peer-reviewed data, and remaining unbiased. The interview questions were presented in a nonthreatening manner with adherence to the interview protocol. I mitigated any bias to the best of my ability, viewed results and data through my researcher lens, and remained focused on the study through the participants' experiences. I conducted the interviews using questions crafted based on the problem and research question. At the end of each interview, I reviewed the questions again with the participant to ensure understanding and accuracy. The participant review was incorporated within an interview protocol that I established. The protocol was reviewed by a professional who had no relation to the study or me.

The interview protocol (see Appendix) was designed to reduce and eliminate any researcher bias. It also helped the participants to understand what was being asked of them. It provided structure for information to be asked and received. I helped the participants feel safe and assured. A protocol improves quality and helps everyone stay aligned with the purpose of the study (Karagiozis, 2018). I implemented proper standards and effort as they pertained to ethics, justice, validity, and value to obtain the best results possible.

Participants

The participants in this study included at least five restaurant owners from RAM who demonstrated success at reducing food waste in their operations. The eligibility criteria for the participants were that they must be owners of a small restaurant business and have strategically decreased food waste and increased profits. The owners must have achieved success in decreasing waste and increasing profits for at least 1 year. The Restaurant Association of Maryland was the resource in accessing participants who met the appropriate criteria. The Restaurant Association of Maryland (RAM) members are foodservice and hospitality businesses including restaurants, bars & taverns, food trucks, grocery stores, caterers, and hotels (National Restaurant Association of Maryland, nd). Communication was via email, phone and or virtual access due to the current pandemic. I used the types of communications to engage with each prospective participant and ensured that they met the criteria before inviting them to participate in the study. I sought approval from Walden University's Institutional Review Board (IRB). I ensured that ethical standards as well as the code of conduct were adhered to and that the participants' human rights were not violated in any manner.

Once I was sure that the restaurant owners met the criteria, I communicated with each restaurant owner to obtain willing participation by fully explaining the study as it pertained to strategies involving food waste in restaurants. Prior to the interview, I had each participant sign an informed consent form. I established a working relationship with the participants by being honest and explaining the full extent of the study. I also addressed any concerns or issues of the participants. The researcher had a duty to disclose certain information to the participant rendering the consent because valid consent requires that information surrounding the study be understood (Millum & Bromwich, 2021). I adhered to the interview protocol (Appendix) which specified the open-ended interview questions in each interview. De Jonckheere et al. (2019) stated that semistructured interviewing requires both a relational focus and practice in the skills of facilitation with skills such as (a) determining the purpose and scope of the study, (b) identifying participants, (c) considering ethical issues, (d) planning logistical aspects, (e) developing the interview guide, (f) establishing trust and rapport, (g) conducting the interview, (h) memoing and reflection, (i) analyzing the data, (j) demonstrating the trustworthiness of the research, and (k) presenting findings. I explained the benefits of the study and the possible impact on society in each interview. I let the potential participants know that by sharing their strategies and success for decreasing food waste, they may be helping the restaurant business prepare for future complexities involving food waste and overcome challenges pertaining to it. I was also consistent in keeping all scheduled appointments. I was punctual and professional, informing them of any changes and accomplishments pertaining to the study. I ensured that the participants were in line with the study by speaking with them before starting the interview process. The owners who did not meet the criteria for the study did not proceed. The participants had to have a positive attitude toward business as it pertains to food waste and share an understanding that an increase in food waste may cause a decrease in profits.

Research Method and Design

Qualitative research is primarily exploratory. Qualitative methodology is used to understand underlying reasons, opinions, and motivations. The qualitative methodology also provides insights into the problem or helps develop ideas or hypotheses for potential research (Aspers & Corte, 2019). Additionally, qualitative researchers seek to understand a stated research problem or topic from the view or perspectives of the local population it involves.

Research Method

A qualitative methodology was used in this study. Qualitative researchers obtain data via open-ended questions that allow for conversational communication (Samul, 2017). Qualitative methodology researchers assess what participants are thinking and how they came to have those thoughts (Bansal et al., 2018). A qualitative methodology was appropriate for this study because I explored how restaurant owners reduce food waste and increase profits. Through this approach, the qualitative researcher had the freedom to explore the reasons and results surrounding the lack of strategies addressing food waste in restaurants and how it can be prevented or reduced. Neither quantitative nor mixed method research were appropriate approaches for the current study. Quantitative researchers explore variables through the measurable dimensions of human behavior and may not give the subjective insight needed in their study (Park & Park, 2016). Quantitative research is appropriate in studies that involve establishing the relationship of variables using statistical techniques. Quantitative studies consist of hypotheses and numerical data. Mixed-method research includes qualitative and quantitative data and inductive and deductive reasoning, drawing on both open- and closed-ended data (Sligo et al., 2018). I only used open-ended questions to gather data on strategies used to reduce food waste in restaurants and did not include a quantitative component in my study. A mixed-method approach was not appropriate for this study. A qualitative research approach was more appropriate for exploring food waste strategies used by restaurant owners to maintain or increase profit.

Research Design

A single case study design was used in this study. Case studies shed light on aspects of human thinking and behavior that may otherwise seem impractical (McLeod, 2019). Researchers who only examine the measurable dimensions of human behavior may not have given the subjective insight that was needed in this study. Again, a single case study design was used in this study. Single case studies can be very advantageous to the value of research, as they allow data to be collected from a single resource with more depth (Ridder, 2017). A single case study design provided extensive explanations of the issue or phenomenon. In single case studies, support from other peer-reviewed sources can be useful (Basias & Pollalis, 2018). The findings derived from a single case study can be considered more valued when the study is supported by a more in-depth exploration of the research questions. A single case study design was appropriate as my research involved a single resource, such as restaurant owners who were members of RAM. Researchers use narrative designs to focus on a person's life story and experiences

(Avison et al., 2017), while a phenomenological design is used to explore lived experiences and mindsets (Berglund, 2015.) An ethnographic design is used to focus on the study of cultures (Edirisingha et al., 2017). Narrative and phenomenological designs were not appropriate for this study because participants' lives, or culture was not explored. In a single case study, the measure of the behavior of the owners of restaurants who were members of RAM and the strategies that they used to decrease food waste was introduced.

Population and Sampling

Data will be collected from five purposely sampled restaurant owners on the East coast of the United States. They will be interviewed using a semistructured process which is based on their lived experiences within the restaurant sector. The interviews will address food waste and the various strategies used to prevent or decrease the food waste. I will also directly observe various processes in the restaurant such as cooking, preparing, storing and serving. The population for this single case study was restaurant owners who were members of RAM. Purposeful sampling is a qualitative research technique. Information-rich cases, which can have the potential to be most effective in exploring the stated phenomenon, will be identified using purposeful sampling (Palinkas et al., 2015). Purposeful sampling was used in this study. A researcher can learn a great deal about issues of central importance when using purposeful sampling (Benoot et al., 2016). The possibilities of empirical generalizations are reduced and there is an increase in insights and in-depth understanding (Benoot et al., 2016).

The target population in this study was five restaurant owners who were members of RAM and who have decreased food waste and increased profits. I searched for individuals who surpassed challenges such as food waste and COVID-19 as owners of their own restaurant and who have remained in business for at least 3 years prior to the interview. The business leaders selected for this study were identified with the help of RAM and internet reviews. I had no prior relationship with the owners. The owners were not chosen because of ethnicity, gender, or religion.

Data saturation occurs when there is no new information observed in the data (Hennink et al., 2017). It is essentially when there are no new data, themes, or coding, and the ability to replicate the study has been achieved (Kiernan & Hill, 2018). I ensured data saturation by asking pertinent questions to participants and continuing to add participants until data saturation was complete. Saturation was reached by using a coded interview system. As a researcher, I also ensured understanding of the phenomenon. Understanding the phenomenon is paramount in qualitative research (Hennink et al., 2017).

Five participants were selected at the start of the study but if data saturation had not been reached additional participants would have been selected. Researchers attain data saturation when no new information is apparent in interviews. Sandelowski (1995) also stated that the main goal involves ensuring the sample size is small enough to manage the material and large enough to provide any new and enriching information that is supportive of the study, which is always a matter of subjective judgment (i.e., guided by researcher experience and assessing the data in relation to the goals of the research).

Ethical Research

Research ethics guide the standards of conduct for researchers. In the simplest terms, ethics can be defined as norms for conduct that distinguish between acceptable and unacceptable behavior (Clark, 2019). Researchers adhere to ethical principles so that the rights and welfare of research participants are protected (Adashi et al., 2018). I applied to Walden University’s IRB to ensure that good, practical, and ethically correct research was conducted (IRB 05-03-22-0591791). The goal of the IRB is to ensure that the participants are protected, including their rights and welfare, risks to the participants, selection and sampling processes for the participants, methodology of the study, and documentation of informed consent (Clark, 2019). I fully adhered to these processes.

I practiced good research that may have added to the knowledge concerning food waste in restaurants. Research has an appropriate research design and is ethically approved by an independent party to protect human subjects and privileged organizational and personal information (Sichler, 2014). Research ethics and guidelines promote moral and social value to protect human and animal subjects’ safety and health and ensure that the public can trust the “quality and integrity of the research” (Resnik, 2011).

I adhered to Walden’s informed consent process. The participants had knowledge and understanding of all aspects of the study. The following was included: (a) a brief description of the study using language that was familiar and understandable to the participant; (b) background information and procedures were discussed; (c) the participants knew that the study was voluntary and were able to discuss any concerns; (d) the risks and benefits of participating in the study were explained; (e) there was no exchange of payments, gifts, or reimbursements before, during, or after the study; (f) privacy was maintained; (g) the participants had the necessary contact information and were able to ask questions as needed; and (h) a statement was included explaining that the data from the study will be stored for 5 years for the participants' protection. Withdrawal from the study entailed a signed form by the withdrawing participant and would not have any negative consequences for the participant. The participants were able to freely discuss reasons or concerns at that time.

Participants' names were protected by using a coding system consisting of letters. No personal names were recorded. Instead, I assigned each of the five interviews a letter from A-E according to the restaurant the person owned. For example, one interview was coded A, another was coded B, etc. I always adhered to the guidelines and principles in the Belmont Report (1979) for respecting participants' rights before, during, and after the study. The participants were able to discuss any challenges pertaining to the interview questions and process. Their answers were repeated and reviewed a second time to ensure unbiased conclusions and an understanding of their thoughts and processes.

Data Collection Instruments

In this qualitative single case study, I was the primary data collection instrument. I gathered data using semistructured interview questions (Appendix B). Interviews are a commonly used instrument to gather data in qualitative research (Jamshed, 2014). They were used according to a specific protocol (Appendix A). Jacob and Furgerson (2012) stated that an interview protocol extends to the procedural level of interviewing and includes a script of what to say before the interview, a script for what to say at the conclusion of the interview, prompts for the interviewer to collect informed consent, and prompts to remind the interviewer about relevant information. An interview protocol was employed to obtain responses that yield the best data possible (Ferero et al., 2018). The protocol entailed the following steps. I started each interview by introducing myself, thanking them for participating, and explaining the purpose of the study. We then reviewed the consent form, and I explained that I would be the only person with access to their responses. Furthermore, I explained that I would keep their names confidential by assigning codes to the interviews. I then asked if I could audio-record the interview. If they said yes, I informed them that they could stop the recording at any point. If they said no, I took notes rather than record the interview. I explained that they could ask questions at any time, and before I began the interview, I asked if they had any questions. During each interview, when needed, I sought clarification to avoid misinterpretation or bias. At the conclusion of the interview, I thanked them for their participation.

The interview consisted of seven semistructured questions that focused on managing food waste within a restaurant environment. For example, the owners were asked to share their thoughts about reviews from customers, etc. pertaining to food waste within the restaurant itself. Member checking between myself as the researcher and the participant was utilized to maintain validity and reliability. Through member checking, the researcher engages with participants to ensure mutual agreement and understanding on the research and is based on shared analytical understanding between researchers and research participants (Caretta & Pérez 2019). I ensured understanding by clarifying and reviewing the participant responses during each interview to ensure that I fully understood.

After the interview was completed, I asked the participant if I could observe the chef, waiters/waitresses and the customers. This secondary data was collected through direct observation of chefs as they prepared, cooked and stored certain food products. I also observed waiters and waitresses as they served food to customers. I was also able to observe customers' reactions and actions as they received their food as well as how much food was actually eaten. This information was recorded through note taking and gave me an idea of how much food is being wasted daily at each particular restaurant. Data taken from the public website from the Restaurant Association as well as the restaurant, itself website was in the form of location, menus and types of food served within each restaurant. This information presented an overall view of location, menus and various portions being served.

Data Collection Technique

The research question for this study is as follows: How are restaurant owners using food waste strategies to maintain or increase profit? The semistructured interview procedure allowed focus and flexibility during interviews to include prompts that may have expanded answers and offered the opportunity to request more information, if required. The interviews were scheduled for 1 hour in length allowing additional time if needed. I ensured an open schedule with an additional 30 minutes to use if needed. this study.

I interviewed each participant face-to-face in a quiet room in the participant's restaurant at a time that was convenient for the owner. The ultimate setting was quiet and had good lighting to allow the interviewer and interviewee the ability to focus on the questions and responses. I followed COVID-19 protocol by maintaining 6 feet of distance between me and the participant.

Each participant was allowed to ask any questions before the start of the interview. The informed consent form was obtained prior to the start of the interview. The form was explained in its entirety, with the goal of protecting the participant's identity and ensuring a comfortable interview for both parties. If the participants chose to no longer participate in the study, they were allowed to. All of the participants chose to participate.

Each interview consisted of my reviewing the goals and purpose of the study, what it was being used for, and why it was being conducted. Jacob and Furgerson (2012) stated that interviews can be ruined by being more interested in getting the notes right than by looking the interviewee in the eye. In each interview, I took the time to ensure that the participant was comfortable and prepared for the interview. I explained the recording process and let the participants know that the recordings were confidential. I reviewed the interview questions and the responses with the participants. I ensured that the meaning of the responses given by the participant was what the participant meant to be expressed. In addition to member checking, which validates the data from the interview (Korstjens & Moser, 2018), this technique helped the participants to have an in-depth understanding of the interview process. The technique also helped the researcher know that the information shared was understood in the way it was intended.

An advantage of semistructured interviews was the flexibility it provided for scheduling each of the participant interviews. Another advantage was the use of open-ended questions that facilitated the expression of personal feelings as they answered the interview questions. The use of open-ended questions is a way for researchers to potentially avoid bias, as the participants can provide subjective answers without suggestions from the researcher (Desai, 2018). A disadvantage of semi structured interviews may lead to the collection of too much data, which may cause difficulties during data analysis. Another disadvantage of semistructured interviews may be participants may not provide detailed and honest answers to the interview questions Secondary data was utilized in that I was able to observe, through direct observation, chefs as they prepared, cooked, and stored certain food products. I also observed waiters and waitresses as they served food to customers. I was also able to observe customers reactions and actions as they received their food as well as how much food was actually eaten. Data taken from the public website from the Restaurant Association as well as the restaurant, itself website was in the form of location, menus and types of food served within each restaurant. This information presented an overall view of location, menus and various portions being served.

Data Organization Technique

Interviews were recorded via an electronic recorder. The instrument for recording was evaluated an hour before the interview to ensure that it was working properly. I kept track of the time during the interview. I did not have additional note-taking materials, as I wanted the interviewees to know that I was completely focused on what they communicated to me. I kept a daily journal of each interview, which was used and written after the interview in the privacy of my office. A log was also kept about the research involved as well as any other supportive data involved. All information was transported via the locked briefcase and stored on a computer system that was password and virus protected. I also employed NVivo for data entry and coding.

In adhering to Walden University's guidelines for safe storage for 5 years, the data was kept in a secured file cabinet within a locked closet. Providing this security protected the identity of the participants. The information will be shredded, deleted, and/or destroyed after 5 years. Surmiak (2018) stated that confidentiality involves the researcher not disclosing information unless the participants consent to its disclosure and, even then, only in ways to which they agreed.

Data Analysis

The analysis of the data represents the most challenging step in the qualitative research process (Sechelski & Onwuegbuzie, 2019). Ravindran (2019) argued that qualitative research analysis is a technique used by researchers to determine the validity and reliability of the results unraveled in each study. The analysis was completed when data are categorized based on the coding with the primary goal of presenting the information in visuals and narratives. Davidson et al. (2017) argued that a qualitative data analysis process was designed to find the connection between the existing literature on the subject and the findings of the research study. A qualitative data analysis process allows the researcher to explore the connection between the existing literature on the subject and the finding of the research in question. Such connection is paramount in validating the accuracy of the findings by the researcher. According to Ravindran (2019), in circumstances where the single data collection method is, triangulation is paramount in the analysis process. In circumstances where the researcher employs a single data collection method, triangulation is especially important in the analysis process. Triangulation is a technique in which researchers use different evidence sources to deal with any possible bias (Richards & Hemphill, 2018). Overall, method, investigator, theory, and data are the different types of triangulations used for data analysis. Triangulation, by combining theories, methods, and/or observers in a study, can help overcome biases that may occur with the use of only a single method (Noble & Heale, 2019). In essence, triangulation helps to explore and explain complex human behavior using more than one method, which offers a more balanced and valid result (Noble & Heale, 2019).

I took the following steps to analyze the data utilizing Yin’s five step analysis. First, I developed a target question to support my problem statement or goal. Second, I collected the data via five audio recordings. I gained familiarity with the data. I did this by reviewing the transcriptions several times. In the compiling phase, the logical and sequential process that I employed for my data analysis was NVivo qualitative management software. I imported the participant's transcripts into NVivo, stored, arranged, and organized the data in alphabetic order in folders (Mihas, 2019). Third, I transcribed the data using NVivo. I did this by entering the data into NVivo, a software program that helps analyze qualitative data. I conducted a line-by-line review of the participant's transcripts and identified themes by highlighting similar words, concepts, phrases, and thoughts with descriptive labels (Phillips & Lu, 2018). Emerging labels developed from this method of coding. As a result, I conducted four rounds of line-by-line coding of the participant's transcripts and was able to narrow my labels to the major themes relevant to my research question. I identified patterns through coding within NVivo. I created coding categories. During the fourth step, I undertook a thematic analysis of the data continuing the use of Yin's process of the phase-5 data analysis technique. NVivo helped me identify patterns within each interview and across interviews. Examples of codes included making food to order and not giving too much food to customers which results in portion control. I also used mind mapping to further explore the organization and creation of thematic analysis. I conducted the data analysis using a word frequency query to further identify patterns most important to the participants. The fifth step is when I interpreted the results. I visualized the codes to try to find any trends, similarities, and differences. I was also looking for new or existing processes, ideas, and perspectives. I interpreted the data in preparation for writing my results section.

Methodological triangulation was employed using semistructured interviews from participants, direct observations, and reviews of public company website information. The methodological triangulation was the most appropriate for this process. In the research, interviews were conducted with business owners from five restaurants located in a metropolitan suburb on the east coast of the United States. Here, using this technique will mainly aid in the identification, categorization, and inferring of the themes of the study (Elliott, 2018). The process will help in understanding the strategies applied by restaurants in managing food waste, during the COVID-19 pandemic. The determination of the criteria used to depict successful restaurants for the research will be a point of focus, as it will help in validating the results.

The data collection process involved in-person semistructured interviews with COVID-19 guidelines of 6 feet apart and wearing masks. After recording the information provided by each restaurant owner, I employed the member-checking process to ensure validity. After going through the interviews, the participants were able to approve or provide changes where necessary to ensure the data was accurate. I was able to observe, through direct observation, chefs as they prepared, cooked, and stored certain food products. I also observed waiters and waitresses as they served food to customers. I was also able to observe customers' reactions and actions as they received their food as well as how much food was eaten. Data taken from the public website from the Restaurant Association as well as the restaurant, itself website was in the form of location, menus and types of food served within each restaurant.

The main goal of combining all the data was to ensure that the overall case was analyzed effectively concerning food waste management strategies by restaurant owners. Most importantly, the use of the NVivo software aided in the categorization, screening, coding, and arranging of the data based on the identified themes in the research. Phillips and Lu (2018) stated that NVivo allows users to complete qualitative analysis functions including sorting and filtering data, building relationships among data, and assigning and defining themes and categories for data. Notably, NVivo software was a useful tool that helped me determine and filter which themes were valuable to each participant. I utilized Yin's process of the phase-5 data analysis technique. By using the phase-5 data analysis technique, it was possible to code themes, compile, disassemble, reassemble, interpret, and conclude the data (Yin, 2013). The NVivo software helped in organizing the research themes based on the collected data and documents and or observations (Harding, 2018).

Through the categorization of matching expressions and themes in the research, it was easier to substantiate the evidence in question. One function of the themes was to cluster and correlate them with the literature and conceptual framework of the research. Consequently, the data analysis process helped in determining an understanding of the successful strategies used by the restaurant business to manage food waste based on the information provided by the owners.

Reliability and Validity

Reliability and validity are widely used and an agreed-upon focus when evaluating the quality and accuracy of a research study. According to Singh (2014), reliability assesses the consistency of a measure, and validity addressed the accuracy of a measure. Validity and reliability also increased transparency and decreased opportunities to insert researcher bias in qualitative research (Singh, 2014). Validity and reliability measure the quality of a research study. It is important to consider both when creating a research design, planning methods, and recording results.

Reliability

Researchers use reliability interchangeably with dependability and together refers to assuring consistency in a research study (Cypress, 2017). To address dependability in my study, the first method I used was to interpret the data without bias. Consequently, Cypress (2017) stated that the reliability of a study is compromised if the wording of a survey is confusing or if the interviewer misinterprets a question or its answer. Baumgart, Craig &Tong (2021) state that the findings should reflect the perspectives of participants and are not influenced by predetermined assumptions or agendas of the researcher. Thus, I bracketed my thoughts and all possible personal bias in my research journal before each interview. According to Munn et al. (2014) utilizing the same protocols and procedures, in a research study increases the possibility of having related results, thus satisfying the dependability of a study. Therefore, I performed follow-up member checking by confirming the summarized interpretation of the interview with each participant. This allowed them the opportunity to assess the accuracy of the interpretation of their interview thus confirming reliability and validation. I also employed an interview protocol with systematic steps that were uniform and consistent with each participant.

Validity

Validity determines the confirmability of the research and is used by the research continuum interchangeably (Cypress, 2017). A researcher can support the validity of the data through trustworthiness, which has four key components: credibility, transferability, dependability, and confirmability (Cypress, 2017). To address the credibility of my study I employed several techniques that would invite the confidential collaboration of the study's results. A researcher asks the same research questions of different study participants and collects data from diverse sources through different methods to answer the same questions (Munn et al. 2014). Therefore, I used methodological triangulation of multiple sources that helped establish credibility and trustworthiness, including face-to-face semistructured interviews, direct observations of participant non-verbal cues, and reviews of public company website information (King, & Stahl, 2020). I also used a tape recorder to record each interview along with employing follow-up member checking each participant's interpreted interview. I ensured reliability and validity through the follow-up member-checking process that allowed me to collaborate with each participant to ensure that I was depicting accurate responses regarding the phenomenon from my participants.

Cypress (2017) asserted that the trustworthiness of the study is a critical component in determining the transferability of a study. Furthermore, I ensured that transferability was satisfied by ensuring that the descriptions of my qualitative single-case study research design and methodology procedure and technique employed in my study are detailed enough for replication by present and future researchers. My role as a researcher was to provide readers with enough information and evidence that the findings of the research can be used in other contexts, and situations. Another technique that I used to gather participants was purposive sampling. Thus, I provided descriptive data with a wide range of information of detailed and accurate descriptions of the participants and criteria.

Incorporating multiple sources of data can improve the confirmability of a study (King & Stahl, 2020). Therefore, to ensure confirmability, I used methodological triangulation of data that included an electronic document of the face-to-face semistructured interviews, direct observations of participant non-verbal cues, and reviews of public company website information. For example, I collected data through observations of how the cooks prepared the food and how the food was cooked. I also observed food being served and the various portion sizes as well as customers discarding food. In some restaurants, the waiter discarded the food at the customer's guidance and discretion. In other restaurants, the customer discarded the food themselves. The second technique I used to ensure confirmability was member-checking. Member checking confirmed that the findings are an accurate and comprehensive reflection and raw data of participants' perspectives, to bolster findings. Confirmability is there to verify that the results or findings of the study are shaped by the participants and not by any potential bias or motivation of the researcher (Aguboshim, 2021).

Cypress (2017) asserted that a valid study should demonstrate accuracy, and a valid instrument or measure should measure what it is supposed to measure. Data saturation is the point at which no new data or themes are attainable (Saunders et al., 2018). Thus, utilizing the follow-up member-checking technique of no added information emerging from the participants allowed me to determine data saturation. For example, I continued to collect data through one-on-one interviews, and observation until I reached data saturation. The direct observation of the chefs and waiters consisted of the (a) amount of food, (b) portion control of the amount of food being served to customers, (c) preparation of food, (d) serving of food to customers, and (e) how the food is being discarded.

Transition and Summary

In Section 2, I explained the purpose of the study and the importance of my role as a researcher. I also described the participants, the population, and sampling involved in the study and discussed the research method and design, ethical search, data collection instruments, collection, and organization techniques, including the importance of reliability and validity as they pertain to my findings and the study. In Section 3, I present my results, as well as how these findings can be applied to professional practice and the potential implications for social change. I also suggest recommendations for future research.

Section 3: Application to Professional Practice and Implications for Change

Introduction

The objective of this qualitative single case study was to explore food waste strategies that restaurant owners utilize to maintain or increase profit. I conducted semistructured interviews with five business owners from five restaurants located in a metropolitan suburb on the East Coast of the United States. Each owner had demonstrated success in decreasing food waste and increasing profit. Findings from the interviews identified multiple strategies that restaurant owners use to decrease food waste and increase profits.

Presentation of the Findings

The overarching research question in this study was: How do restaurant owners use food waste strategies to maintain or increase profit? Semistructured interviews and company websites uncovered findings for this qualitative single case study. I conducted semistructured interviews with each restaurant following CDC COVID-19 guidelines. During the interview process, mask and distance restrictions were implemented. I assigned participants pseudonymous names (Participants A, B, C, D) to maintain confidentiality. The participants were asked seven interview questions (see Appendix) pertaining to strategies that may reduce food waste within a restaurant. Member-checking and data triangulation from semistructured interviews, direct observations, participant observations, and reviews of public company website information were employed.

During the semistructured interviews, the data were triangulated and analyzed revealing data saturation. The interview questions were uploaded into NVivo for query analysis, themes, and codes. Analysis of the data provided the best strategies for decreasing food waste in restaurants thereby maintaining or increasing profits. Data obtained in the interviews were maintained in a locked file cabinet within my office which also has a lock and key entry. This helped to maintain the privacy and safekeeping of information for each participant. To ensure validity and reliability, member checking was conducted 1-2 days after the interview. The participant's responses to the interviews were verified to decrease bias. Three major themes emerged pertaining to strategies that decrease food waste: (a) employee training, (b) standard operating procedures, and (c) portion control.

Data were collected from five business owners from five restaurants located in a metropolitan suburb on the East Coast of the United States. The data and research findings aligned with the conceptual framework of this study. Specifically, the results of this study are aligned with Edward Freeman's (1984) theory that holds that a company's stakeholders include anyone affected by the company and its workings. The theory helps an organization to redefine itself based on the benefits of the stakeholders including the stability of the organization (Fernandez-Feijóo et al., 2012). The stakeholder theory deals with what organizations should do if they want to enhance the interest of the organization. Increasing profits is considered one of the enhancements and interests. Stakeholder theory helped to set formats and guidelines for an understanding of the strategies needed to decrease food waste, which may help restaurant owners to increase profits. The findings confirmed strategies that are beneficial in decreasing food waste in restaurants. The findings support that (a) employee training, (b) standard operating procedures, and (c) portion control are strategies may decrease food waste within restaurants.

The information within the literature review confirmed a platform for insight into the strategies that may prevent food waste in restaurants. Recent literature includes studies on food waste with a focus on consumer food waste, farms, and grocery store distribution, with less focus on restaurants (Baumgart et al., 2021). Current and past studies have focused on restaurants in foreign countries more so than in the United States (Baumgart et al., 2021). Studies are emerging but are limited pertaining to food waste in the United States.

Three prominent themes of this study were: (a) employee training, (b) standard operating procedures, and (c) portion control (see Table 2). The findings supported by the themes confirm that implementing certain strategies such as employee training, standard operating procedures, and portion control can decrease food waste which may increase profits. Figure 1 identifies how the three themes lead to decreased food waste and increased profits.

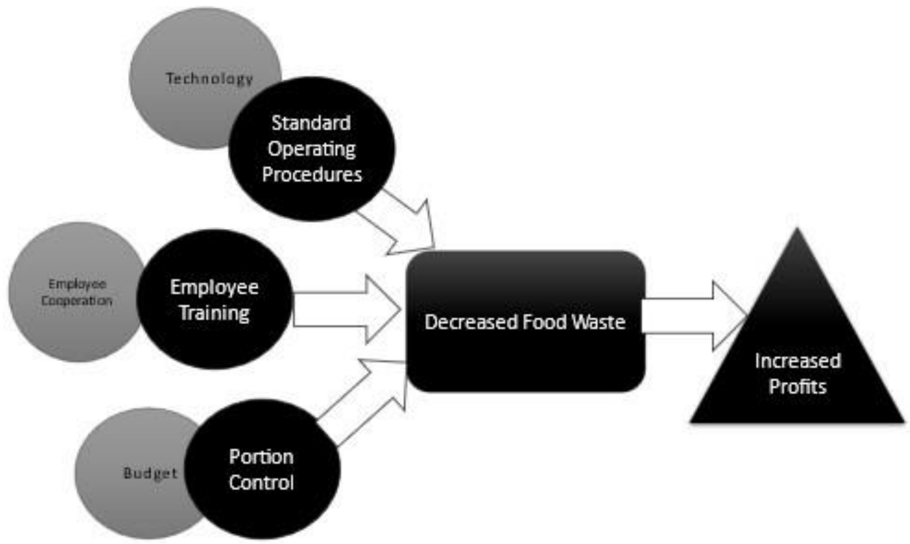
Table 2

Themes Based on Interviews With Participants

Themes	Referenced themes	Did not reference themes
Employee training	A, B, C. D, E	0
Standard operations procedures	B, C, D, E	A
Portion control	A, B, C, D, E	0

Figure 1

Interconnection of Sustainability Initiatives



Theme 1: Employee Training

References related to owners needing to provide more employee training in order to meet certain goals, as they pertain to decreasing food waste, had the greatest number of responses from the participants. All participants confirmed and supported that employee training concerning decreasing food waste is needed on a consistent basis. For example, Participant D stressed "employees need to be engaged with the vision of the organization to decrease food waste. This will be conquered with employee training."

By implementing sustainability initiatives to reduce waste with training, restaurant owners can increase the available food supply, create opportunities for increased profits and decrease pressure on the environment (Alcorn et al.2021).

Participants often mentioned employee cooperation when they spoke about training needs. Almost all participants stated that employee cooperation is heightened with knowing what to do and what is expected. Participant C pointed out that “there needs to be a consistency of meetings, coaching, communication through encouragement and strict guidance in order to keep the employees engaged in the goals and adhering to the strategies and guidelines.”

Most of the participants mentioned that employee cooperation is needed to adhere to existing restaurant policies, for employee accountability, and employee training. Certain tools were identified to assist with decrease food waste. One distinct tool that was mentioned was the use of computer programs in which education was provided. Another tool mentioned was specific training that focused on cooking specifications and guidelines. Both tools mentioned allowed for the identification, development, and successful support of strategies which helped to decrease food waste. For example, Participant B stressed successful strategies to increase profits by using multiple tools such as computer programs to provide education concerning food preparation and analyzing food waste from month to month along with selling and purchasing. Put another way, Participant C stated, “strategies were developed to increase profits by using multiple tools such as training, emphasizing the right specifications so that the cook can avoid recooking.”

Increased training coupled with increased knowledge of the goals and vision pertaining to food waste help the employees understand the importance of reducing food waste in restaurants. Participant C emphasized “key barriers that were encountered concerning employees adhering to restaurant policies including adhering to the guidelines to increase training, meetings, coaching, and communication."

Correlation to the Conceptual Framework

All participants mentioned the need for a form of training and communication of expectancy, vision, and goals. This study's conceptual framework of stakeholder theory emphasizes that a company's stakeholders include everyone that is affected by the company (Freeman & McVea, 2001). The theory helps an organization to redefine itself based on the benefits of the stakeholders to include the stability of the organization (Fernandez – Feij00 et al., 2012). The stakeholder theory focus is on the organizations ability to redefine itself for the better of the stakeholder's interest and benefit to include stability of the organization., training and refocusing will need to take place. Interests of all stakeholders involved include profits, which may lead to stability within the company. A change needs to take place if the organization is constantly losing profits due to food waste. Strategies involving training and employee cooperation may be beneficial.

Correlation to the Literature

The literature review stated that training is important in reducing food waste. Training is also supported by reviews in the literature. Principato et al. (2018) and Pirani and Arafat (2016) argued that people have different preferences when it comes to fruits and vegetables that are served along with other meals; the training is important for enabling the employees to navigate such preferences. Engaging customers and letting them understand the options help to reduce the amount of waste that is generated through leftovers (Sakaguchi et al., 2018). Training has been used as a method of mitigation as well as management of waste. Recent studies have shown to confirm that implementing training concerning the use of strategies to reduce food waste has been successful when the training is consistent (Elnakib et al., 2021).

Theme 2: Standard Operating Procedures

Standard operating procedures (SOP) and technology were identified as factors needed to decrease food waste in restaurants. Participants B, C, and D mentioned that SOPs and technology help to set the platform for positive change and reaching food waste goals. Participant C stated, “waste can be avoided by using standard SOPs and food portion *guides*.” There should be no alterations or deviations from the standards that have been set and agreed upon by the departments within the restaurants that have authority and charge over the food (Principato et al., 2018). Responses from the interviews about their standard operating procedures were, review your operation procedures with employees, create standards to control food portions, develop a process for having employees adhere to those standards, set clear expectations, rules and guideless for food handling, utilize portion control, and monitor proper storage of food while maintaining strict guidance with the cooks.

The technical comments that were made during the interview were that the use of multiple tools such as computer programs provided education concerning food preparation and analyzing food waste from month to month along with selling and purchasing. Participant B stated, “his organization identified and developed successful strategies to increase profits by using multiple tools such as computer programs providing education concerning food preparation.” Participant D added:

It is important to develop successful strategies to increase profits by using multiple tools such as training, emphasizing the cooks to not re- make or re-cook orders, to cook with the right specifications so that there will not have to be any re cooking. Proper storage of food using standard SOP and food portion control guides are important.

Most participants mentioned needing cooperation from employees that can be obtained through training and communication. Most (90%) of the participants stated that if the employees do not adhere to the guidelines and are not consistent that the food waste will not decrease. For example, Participant D concluded "in order to decrease food waste, a restaurant needs to adhere to the policies and plans."

Correlation to the Conceptual Framework

The stakeholder theory assists the organization in redefining itself which addresses the issues related to profits decreasing due to food waste. A concept that can be utilized to combat this decrease is a redefinition of guidelines such as operating procedures with the assistance of technology (Papargyropoulou et al. 2019). The owners should adopt the role of stakeholder in promoting long-term stakes (Freeman & McVea, 2001). As a researcher in this study, I recognized that a redefining of the organization meeting its needs, or strategies can take place by implementing standard operating procedures.

Correlation to the Literature

The concepts in the literature review supported having standard operating procedures. Policies and legal regulations from the U.S. government and their regulatory agencies have been applied to help manage the food waste problem in several parts of the country (Clowes et al., 2018). Policies are a set of principles or regulations that govern a given institution or operations in each field. The regulations imposed on restaurants have been intended to reduce the amount of food waste that is generated from the business during their daily operations. Recent studies have shown to confirm that the use of standard operating procedures such as the utilization of referential frameworks to assist with food audits, guidelines for internal responsibilities, answers to questions from managers as it pertains to decreasing food waste as well as prevention plans can provide solutions in the decrease of food waste thereby possibly increasing profits (Vizzoto et al., 2021.) There is food insecurity in most parts of the world, yet at the same time there is also increasingly high amount of food wastes. The regulations are meant to increase food security through the reduction of wastage (Clowes et al., 2018).

Theme 3: Portion Control

In using NVivo as a tool, I identified portion control as a theme. Technology was added as a subtheme due to the responses from NVivo. Portion control was mentioned by all participants as a needed strategy for decreasing food waste. Portion control along with the budget was mentioned by every participant. Everyone mentioned the need for guidelines and or protocols to be established and adhered to. Employees need a standard to utilize and use as a resource. Food preparation and analyzing food waste from month to month along with selling and purchasing was also mentioned. Participant F shared; "decreasing food waste starts with order proportion, the less on the shelves the better which means that the food is being bought and not wasted, pay attention to inventory."

Measuring delivery quality against the orders made is a management practice that prevents food from turning to waste before the actual value is gained, which has been viewed as a practical method of preventing the occurrence of waste in restaurants (Pak et al., 2018).

Correlation to the Conceptual Framework

The stakeholder theory emphasizes owners and or managers performance in enhancing the interest (increasing profits) of the organization. The need for processes and protocols are needed in this venture. The stakeholder theory helps in having guidelines for understanding the composition of strategies needed to decrease food waste.

Correlation to the Literature

In the review of the literature, portion control was very important in decreasing food waste. Serving food to the customer that overfills the plate has a potential for food loss and waste. Restaurant workers need to be sure to determine optimal food portions to find the exact customer needs to avoid food being left on the plates (Principato et al., 2018). The assessment entails determining exactly the type of additional foods that are often served with the main meals. Principato et al. (2018) There is also training on portion control where the restaurant workers learn that the food served to customers should not be so little such that the customer feels the money they have paid is undervalued (Pirani & Arafat, 2016). Recent studies confirm portion control as a strategy to reduce food waste by revising menus after accessing items that are usually left over, reducing buffet items that are often wasted, reducing the quantity of food prepared and encouraging customers not to waste food (Rady et al., 2021).

Applications to Professional Practice

Based on the findings in this study, restaurant owners use strategies including (a) training and employee cooperation, (b) standard operating procedures and technology, and (c) portion control and budget as strategies to decrease food waste which increases profit. This study uses the concept of the performance of owners and their decisions for improving the interest of the organization (Freeman & McVea, 2001). In understanding the stakeholders' theory and that the concept of the theory helps organizations to redefine itself based on the benefits of the stakeholder. The stakeholder theory includes anyone affected by the company and its workings. This theory helps to set a format as to the understanding of composing certain strategies needed to decrease food waste. This may result in an increase in jobs for the community, increasing nutrition education and guidelines, as well as increasing the stability of the organization. Owners in accomplishing the composition and results of these strategies may enhance their businesses.

Food waste in restaurants can be managed through effort and consistency of utilizing the strategies outlined by this study's participants. Owners can organize and reinforce these strategies through certain measures comparable to the organization/ restaurant. Controlling and or reducing food waste can benefit professional practice in setting and adhering to goals that will help set priorities in restaurants. The priorities will help maintain proper nutrition within restaurants as well as setting priorities and guidelines for cooking within restaurants.

Implications For Social Change

Individual owners of restaurants who initiate actions based on the results of this study may decrease food waste which will increase profits. The implication for social change is that the protocol for certain procedures performed in the restaurants such as preparation of foods, storage of foods, and portion control and budget analysis to name a few, will be maintained through SOPs supported by technical reinforcements (training tools) which will aide in increasing profits because of the decreasing of food waste. Communities and societies may benefit from decreases in food waste because food waste may promote an increase the availability of jobs in the community thereby decreasing unemployment as a result of a decrease in food waste, the amount of waste in landfills will decrease which will decrease the amount of toxic chemicals being emitted into the atmosphere. Balasubramanian et al., (2021) stated that the waste thrown in these landfills settles and forms heaps over a period of time decomposing to produce land fill gases like methane, ammonia, CO_2 etc. aiding climate change. The landfills are also often full of insects and pests like mosquitos and rats causing human diseases (Balasubramanian et al, 2021). The absence or decrease of food waste in the landfills may be advantageous to the environment on a global level. Organizations may benefit from the results of this study because when restaurants maintain and adhere to guidelines of restaurant procedures, they are supporting a healthier environment. They are advancing and promoting a stronger and positive business ethic that can be advantageous within the restaurants. Customers have a business that supports their nutritional needs. Changing or developing processes to meet the needs of the customer in a positive way increases the value of the restaurant which may increase the number of customers (Gladysz et al., 2020). An increase in customers can mean more profits for the restaurant.

Recommendations for Action

Research suggests that owners of restaurants consider an approach that utilizes the concept of the stakeholder theory. The framework of the stakeholder's theory includes anyone that is affected by the company and its actions. In understanding this concept, it is beneficial for a company or restaurant to redefine itself based on the benefits of the stakeholders. Therefore, if the restaurant is wasting food and profits are decreasing, owners must implement strategies to overcome this challenge. Based on the results from this study, the recommendations for actions consist of the following strategies. Owners of restaurants use strategies that pertain to (a) training and employee cooperation, (b) standard operating procedures and technology, and (c) portion control and budget as strategies to decrease food waste which could increase profit based on the findings in this study.

When owners implement these strategies, food waste is decreased which is exemplified through various things such as profits, budgets, and inventory.

Recommendations for Further Research

There is limited research concerning restaurants and food waste. More research is needed within restaurant and hospitality organizations to understand the unique needs of this industry. Findings from this study could be used to develop a quantitative survey for a nationally representative sample of restaurants to better understand which strategies are used most often and where additional training opportunities may exist. Pilot studies may be implemented with a question as to whether buffets are creating more of a waste of food. Currently, a vast amount of research concerning food waste is centered around farmland, grocery stores, and consumers' homes as it pertains to food waste. I would also suggest further research with a focus on restaurants and their daily operations as it pertains to all aspects of serving customers.

Reflections

Conducting the study has been informative and a positive experience. The importance of food waste and how it not only affects the business world but the world on a social level as well. It is very astounding how attending a restaurant and unknowingly participating in food waste can have its effects on everyone from the restaurant itself to the community in which we live as well as the atmosphere. The ability to have strategies that help with food waste is very important. During the study, I had the opportunity to observe employees in their everyday environment within the restaurant and was able to see food waste taking place on a firsthand basis. Food was being wasted and thrown away without any sincere acknowledgment. I observed at least three outcomes: owners are very concerned about waste and are aware of certain strategies but not how to get the employees engaged with the strategies, employees are aware of certain strategies as implemented by management but may not be motivated to adhere to them, and if the strategies are implemented and adhered to food waste can decrease resulting in positive changes. I observed an electronic computerized tool that helps with tutoring to enhance certain guidelines for storage, guidelines for preparation, portion control, and other waste prevention methods. In my observation, owners are very aware of the strategies but know how to include employees in their implementation. Owners may need further training as well. The success of decreases in food waste begins with management. Most of the literature that I have researched focuses on restaurant employees and guidelines that result from certain strategies. There needs to be involvement on all levels including the stakeholders.

Conclusion

Gunders & Bloom (2017) stated that up to 40% of all food in the United States is wasted, and with that food we're wasting a tremendous amount of water, energy, and money while simultaneously producing climate pollutants (in landfills). More than one third of food waste comes from the residential sector while restaurants are the second largest (Collins, 2021). Yet, there are few studies concerning food waste in restaurants.

The purpose of this qualitative single study was to explore strategies that restaurant owners can implement to reduce food waste. Three components were identified to decrease food waste in restaurants: employee training, the presence and implementation of standard operating procedures and portion control. Implementing these elements have been shown to decrease food waste thereby increasing profits.

The study results may contribute to social change by providing more strict and precise guidelines in the restaurant. As food waste decreases, profits may increase, which may reduce unemployment in the communities. The decrease in food waste also means less waste in landfills which means less chemicals will be emitted from the landfills into the air which will help the atmosphere. Food waste and the issues related to it can be decreased with certain strategies, knowledge, motivation, and consistency.

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Appendix: Interview Protocol With Questions

What I will do	**What I will say--script**
Introduce the interview and set the stage—over coffee/water	**Signature of Papers and Introduction** Good morning/afternoon, my name is Andrea Ratliff. Thank you for participating in my research study. This initial interview will last approximately 45-60 minutes which will consist of me asking you questions regarding strategies you have used to decrease food waste _____________. The purpose of my research study is to explore strategies that restaurant managers use to decrease food waste and increase profits _________________.
Review the consent form. Ensure there are no questions or concerns and a full understanding of the content of the consent form.	**Consent Forms** Before we begin, I will need you to sign all release forms acknowledging and verifying your voluntary agreement to speak with me regarding successful physician engagement strategies for use in my research study. The first form is the statement of participant confidentiality. This form states I will keep your information confidential.

Wait for signatures	The second form is the informed participation consent form. This form states that your participation is voluntary, and you may withdraw at any time without penalty. This form also states your responses and personal identifiable information will be confidential. Lastly, I will do no harm to you. I will be the only person who will have access to the responses recorded and written. Thank you for agreeing to participate and sharing your experiences in this research study.
Ask to record the interview and ensure a verbal authorization is given.	**Recording Permission** To assist my notes, I would like to record this interview. The purpose of the recording is to help capture your responses accurately so that I can focus on the discussion. **If yes**: Please let me know if at any point you would like me to stop recording.

	If no: I respect your decision and will only take notes.
Inform participant they can ask questions at any time during the interview.	**Initial Questions** Do you have any questions for me before we begin? **If yes**: Discuss/answer the questions. **If no:** If at any point you have questions, please feel free to ask me. I am open to answering any questions.
- Be aware of non-verbals - Paraphrase as needed - To get more in-depth, ask probing follow-up questions	1. How did you identify or develop successful strategies to increase profits by decreasing food waste?
	2. What strategies were not successful in helping you increase profits by decreasing food waste?
	3. How did you assess the effectiveness of the strategies that you implemented to prevent food waste in restaurants?
	4. What is your assessment of the amount of money that was being lost in your restaurant on a daily basis due to food waste?

	5. What key barriers did you encounter while implementing strategies to decrease food waste within a restaurant?
	6. How did you overcome these key barriers?
	7. What additional information regarding strategies to increase profits by decreasing food waste would you like to share that we have not already discussed?
Reflect on unanswered questions after probing. Tie all learning after the initial interview together.	**Reflection** You said earlier that ________ or Can you clarify ___________
Thank participant and wrap up the interview	**Conclude Interview** Thank you for participating. You have given me a lot of information of how you have successfully implemented strategies to help decrease food waste in restaurants.___________.

Schedule follow-up member checking interview	**Follow Up Interview Request** To ensure I have captured your responses correctly, I would like to schedule a follow-up interview. During the follow-up interview, I will have an abridged transcript for your review to ensure I captured your responses adequately. **If yes**: Please provide me a specific time to do so and thank you for agreeing to do so. **If no**: Thank you for your time and participation.
Set the stage by introducing the follow-up interview session.	**Follow Up Interview** Thank you for agreeing to this follow-up interview. The purpose of this follow-up is to ensure I have adequately captured your responses during our initial interview. I have prepared an abridged transcript for your review and feedback.
Share a copy of the abridged transcript for each answer	Listed below is a summation of your responses from the first interview. Please verify that the information is correct and let me know if there is a response that needs correcting.

Ask probing questions that are related to the topic that may have been discovered after the initial interview, while adhering to IRB approval. Review each question and the abridged transcript answer and ask the following: Was anything missed? Would you like to add anything?	**1. How did you identify or develop successful strategies to increase profits by decreasing food waste?**
	2. What strategies were not successful in helping you increase profits by decreasing food waste?

	3. How did you assess the effectiveness of the strategies that you implemented to prevent food waste in restaurants?
	4. What is your assessment of the amount of money that was being lost in your restaurant on a daily basis due to food waste?
	5. What key barriers did you encounter while implementing strategies to decrease food waste within a restaurant?
	6. How did you overcome these key barriers?
	7. What additional information regarding strategies to increase profits by decreasing food waste would you like to share that we have not already discussed**?**