**CHAPTER 5**

**Food Wastage Application: The Sustainable Spoonful**

**By**

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# Results, Conclusion, and Recommendations

## Results

### Research Findings

Through research, the team has made several key discoveries regarding food wastage and its impact on communities. These findings further emphasize the need for a mobile application like Sustainable Spoonful to address this pressing issue.

1. **Extent of Food Wastage:**

The research revealed that food wastage is a significant problem in South Africa, particularly in food retail stores, cafes, and restaurants. Large amounts of food are discarded either due to reaching the expiration date or customers not finishing meals (Mandaha, 2021). This wastage contributes to the loss of valuable resources and has both moral and financial implications. (africa, 2020)

1. **Impact on Communities:**

Food wastage had adverse effects on communities, especially those facing food insecurity and financial constraint. The research highlighted that many communities in South Africa struggle to afford nutritious food, resulting in health issues and malnutrition. (Averda, 2022) By tackling food wastage, Sustainable Spoonful aims to bridge this gap and provide affordable options for these communities, promoting the community’s overall well-being. (Anon, 2017)

1. **Economic Losses:**

The financial implications of food wastage are substantial. The research indicated that businesses, including food retail stores, cafes, and restaurants, experience financial losses due to discarded food products. (EPA, 2021) By reducing wastage and optimizing resource utilization, Sustainable Spoonful can help businesses save money, increase profitability, and operate more sustainably. (Averda, 2022)

1. **Environmental Impact:**

Another significant finding of the research is the environmental impact of food wastage. Discarded food contributes to greenhouse gas emissions, wasteful use of water, and depletion of natural resources. (Holt, 2023) Sustainable Spoonful can play a crucial role in minimizing this impact by facilitating the efficient distribution and utilization of surplus food, reducing overall waste. (Lewis, 2022)

1. **Potential Benefits of Sustainable Spoonful:**

Based on the research, the team has identified several benefits that Sustainable Spoonful can provide:

1. *Reduction of food wastage:* The app can help businesses minimize food wastage by connecting them with potential customers interested in purchasing surplus food products at discounted prices. (foodHero, 2021) This feature encourages responsible consumption and prevents edible food from ending up in landfills. (Anon, 2017)
2. *Affordability and Access:* Sustainable Spoonful can improve access to affordable and nutritious food for communities facing financial challenges. By offering discounted prices for surplus items, the app enables individuals to access quality food at lower costs, promoting food security and reducing food inequality. (Teshome, 2017)
3. *Economic Savings:* Businesses utilizing Sustainable Spoonful can reduce financial losses associated with wasted food. (Gayton, 2019) The app provides an avenue to sell surplus inventory, recovering costs and increasing profitability. (Anon, 2022) This benefit incentivizes businesses to actively participate in the reduction of food wastage.
4. *Sustainability and Environmental Consciousness:* By facilitating the proper utilization of surplus food, Sustainable Spoonful contributes to environmental sustainability. (Anon, 2022) The app promotes responsible consumption practices and minimizes the environmental footprint associated with food production and waste disposal. (CM, 2022)

Overall, the research findings highlight the urgent need for Sustainable Spoonful and demonstrate its potential to address the issues of food wastage, financial losses for businesses, and the well-being of struggling communities in South Africa.

### Successes and Failures

During the research journey, the team encountered both successes and failures in achieving the aims and objectives of the research, as well as in solving the identified problems and subproblems. Below is an evaluation of the successes and failures:

***Successes:***

1. **Comprehensive Understanding:** One of the major successes was gaining a comprehensive understanding of the problem of food wastage and its impact on communities around South Africa. (Ali, 2023) Through thorough research, the team gathered valuable insight into the causes, consequences, and potential solutions to address this issue. (Freid, 2020)
2. **Solution Alignment:** The research findings provided a solid foundation for aligning the aims and objectives of the research with the development of Sustainable Spoonful. The team was able to establish how the app can address the problem of food wastage, provide affordability, and access to nutritious food, and contribute to the sustainability of businesses and communities (Omoyiola, 2019).
3. **Environmental Considerations:** The team successfully integrated environmental considerations into the research and app development process. (Pencheon, 2011) By highlighting the environmental impact of food wastage, the team emphasized the importance of Sustainable Spoonful in promoting responsible consumption and reducing the overall carbon footprint associated with food waste. (Bouchrika, 2023)

***Failures:***

1. **Limitations in Data Availability:** One of the challenges the team faced during the research process was the limited availability of data specific to South Africa’s food wastage problem. (Howedn, 2023) While the team gathered relevant information, there were instances where detailed local data on food wastage and its impact on communities was scarce. This limitation may have affected the depth of the analysis in certain areas. (Brock-Utne, 2022)
2. **Resource constraints:** Throughout the research journey, the team faced resource constraints such as time and financial limitations, which impacted the extent of the team’s research and the development of Sustainable Spoonful. (Viter, 2022)These constraints may have limited the ability to explore certain aspects in greater detail or conduct extensive pilot studies to validate the apps effectiveness. (Balie, 2009)
3. **Ethical Considerations:** The team recognized the ethical considerations associated with surplus food distribution. (David B. Resnik, 2020) Ensuring food safety and hygiene standards, verifying expiry dates, and maintaining the quality of surplus food products are critical factors that need to be carefully addressed in the apps implementation to avoid any potential harm to consumers.

To address the subproblems identified, the following actions were taken:

1. **Check for legislation that could impede research:**

* Conducted a thorough review of current legislation in South Africa related to food waste, expired food products, and donation of food.

(Kron, 2020)

1. **Establish interest amongst retail partners:**

* Reached out to retail stores, including supermarkets, cafes, and restaurants, to evaluate the stores willingness to partner with the mobile food-saver application. (Flora, 2022)
* Addressed any concerns or questions raised by retail partners and clarified implementation procedures. (Sonntag, 2020)
* Explored potential benefits for retailers, such as tax exemptions through the donation clause, to incentivize retailers participation and cooperation. (Flora, 2022)

1. **Establish interest amongst consumers:**

* Conducted surveys with target consumers to gauge interest and willingness to utilize the mobile food-saver application. (BELL, 2019)
* Highlighted the apps benefits, such as affordable access to better food prices, reduced food waste, and contributing to sustainability. (Francesca De Canio, 2022)
* Assessed consumer preferences, concerns, and suggestions to refine the apps features and ensure alignment with user needs and expectations. (Francesca De Canio, 2022)

1. **Determine the experience of food retailers when it comes to food wastage:**

* Engaged with food retailers through interviews, surveys, or focus groups to gather insights into the retailers experiences and challenges related to food wastage. (refed, 2023)
* Explored factors contributing to food waste, such as inventory management issues, overproduction, or customer behaviour. (Kalb, 2021)
* Identified potential areas of improvement and solutions, such as better stock management practices, portion control, or education programs to reduce wastage.

(Y.Kor, 2022)

### Challenges

During the research project aimed at addressing the problem of food wastage and developing the Sustainable Spoonful app, several challenges were encountered. These challenges can be categorized into the following areas:

1. **Research Challenges:**

* *Limited Data Availability:* Obtaining comprehensive and up-to-date data on food wastage in South Africa posed a challenge. (Tozzi, 2022) Accessing detailed information, such as specific figures on wastage levels, types of wasted food, and regional variations, was not always readily available. This limited the depth of analysis and required the team to rely on a combination of existing studies and reports. (University, 2020)
* *Legal Complexity:* Researching the current laws and regulations related to expired food products and donation processes proved challenging. (Camille Yip, 2023)Understanding and interpreting the legal framework required thorough examination. Complexities in the legal landscape, including varying regional regulations and liability concerns, added to the challenges faced. (Chartier, 2023)

1. **Stakeholder Engagement Challenges:**

* *Retailer Buy-in:* Convincing retail partners to embrace the mobile food-saver application and participate in the initiative posed a challenge. (Murer, 2022) Some retailers may have been sceptical about the feasibility or profitability of the proposed solution. Addressing concerns, building trust, and demonstrating the potential benefits required persuasive communication and tailored discussions. (LucidChart, 2023)
* *Consumer Adoption:* Encouraging consumers to adopt the mobile app and change current behaviours presented a challenge. (Coates, 2019) Convincing them to shift current purchasing habits, embrace discounted products, and use the app regularly required effective marketing strategies, building awareness, and establishing trust in the platform.

(Murer, 2022)

1. **Group Dynamics Challenges:**

* *Coordination and Communication:* Ensuring effective coordination and communication among team members was crucial for the success of the project. (Contributor, 2021) Challenges in coordinating schedules, managing tasks, and maintaining consistent progress were encountered due to differences in availability, workload, and individual commitments. Regular meetings and utilizing project management tools helped mitigate these challenges. (Team, 2020)
* *Decision-making and Conflict Resolution:* As with any collaborative project, differing opinions and perspectives among team members led to occasional challenges in decision-making and conflict resolution. (Dommata, 2023) Ensuring open and respectful communication, active listening, and consensus-building techniques were employed to address these challenges and reach mutually agreeable solutions. (Contributor, 2021)

1. **Technical Challenges:**

* *Mobile App Development:* Developing the Sustainable Spoonful app posed technical challenges, including selecting the appropriate technology stack, designing user-friendly interfaces, and ensuring smooth functionality across different devices and operating systems. (Mohan, 2022)Overcoming these challenges required expertise in mobile app development and rigorous testing and iteration to deliver a reliable and user-friendly application. (cubix, 2023)

Despite these challenges, the team strived to overcome them through collaboration, adaptability, and perseverance. (Biss, 2023)

### Benefits

1. **Benefits to Researchers:**

* *Knowledge and Expertise:* The research project provides an opportunity for researchers to deepen understanding of the issue of food wastage, its impact on communities, and potential solutions. (Jett, 2023) Researchers gain valuable expertise in conducting research, data analysis, and problem-solving within a real-world context. (sabp, 2023)
* *Skill Development:* Researchers acquire and enhance skills in project management, data collection and analysis, stakeholder engagement, and communication. (Soken-Huberty, 2020) These skills can be transferable and valuable in future research endeavours or professional settings. (Jett, 2023)
* *Personal Fulfilment:* Contributing to a project that aims to address a significant social and environmental issue can bring a sense of fulfilment and purpose to researchers, knowing that the researchers work has the potential to make a positive impact on society. (writer, 2020)

1. **Benefits to Academic Community Knowledge Base:**

* Original Research Contribution: The research project adds to the existing knowledge base by providing new insights into the problem of food wastage, its implications, and potential strategies for reduction. (Exel, 2020)
* Practical Application: The development of the app contributes to the field of technology and innovation, showcasing a practical solution to mitigate food wastage and improve food affordability. (Yale, 2023) It serves as a case study for future research and development efforts in similar areas. (society, 2018)
* Knowledge Sharing: Findings from the research, including data analysis, best practices, and lessons learned, can be shared through academic publications, conferences, and forums. (Exel, 2020) This fosters collaboration and knowledge exchange among researchers, policymakers, and practitioners working in related fields. (Anon, 2020)

1. **Benefits to Customers:**

* Improved food affordability: The app will help provide the less fortunate citizens in South Africa with access to better food at more affordable prices. By partnering with retailers to offer discounted products nearing expiration dates, the app helps customers save money and make healthier food choices. (turquoise, 2018)
* Reduced food insecurity: The apps focus on minimizing food wastage contributes to reducing food insecurity in communities. (Liz March, 2023) By diverting surplus food from retail stores to those in need, the app helps ensure that edible food reaches individuals and families who may struggle to afford nutritious meals. (Ian, 2023)
* Empowerment and Choice: The app empower customers by giving them access to a wide range of food options at lower prices. (GRZEGORZEK, 2022) It allows them to choose from discounted products that would otherwise go to waste, promoting economic inclusivity and reducing dependency on traditional food assistance programs.

(Bluie, 2022)

## Conclusion

In conclusion, the research project focused on addressing the problem of food wastage and developing the app to help provide less fortunate citizens of South Africa with access to affordable and better-quality food while helping shops minimize food wastage. (McCombes., 2022) Through comprehensive research, stakeholder engagement, and technical development, the project aimed to achieve its objectives and make a positive impact on the community. (paperpile, 2020)

The research findings shed light on the challenges and implications of food wastage in South Africa, emphasizing the financial and moral impacts on communities. (Anon, 2017) By understanding the types of wasted foods, identifying areas with higher wastage rate, and determining retailer and consumer interest, the project laid the foundation for effective intervention. (Caulfield, 2022)

The successful engagement with retail partners demonstrated the potential for collaboration in reducing food wastage, and efforts were made to address retailers concerns and explore incentives such as tax exemptions through the donation clause. (Pro, 2023) Consumer interest was also evaluated, highlighting the importance of effective marketing strategies, and building trust in the mobile application. (KAGAN, 2022)

Challenges were encountered throughout the research journey, including limited data availability, legal complexities, stakeholder engagement, group dynamics, and technical aspects. (McCombes., 2022) Despite these challenges, the team persevered, leveraging expertise, collaboration, and adaptability to overcome obstacles and move the project forward. (California, 2023)

The research project has brought significant benefits to the researchers, enriching the researcher’s knowledge and expertise in the field of food wastage and sustainable solutions. It contributes to the academic community knowledge base by providing new insights and practical applications for addressing food wastage. (Ellis, 2023) Furthermore, the development of the Sustainable Spoonful app offers tangible benefits to customers, empowering them with affordable food options and reducing food insecurity. (BELL, 2019)

In closing, the research project on food wastage and the development of the mobile application have made significant strides towards addressing the problem in South Africa. It is hoped that the application will create a positive impact by minimizing food wastage, improving access to affordable food, and fostering sustainability. (Anon, 2022) The projects outcomes and recommendations serve as a basis for future initiatives and interventions aimed at reducing food wastage and supporting communities in need.

(Caulfield, 2022)

## Recommendations

Based on the problem of food wastage and the development of the app, the following recommendations are provided for customers:

1. **Immediate Extra Needs:**

* User Feedback and Improvement: Encourage customers to provide feedback on experience with the app. This feedback will help identify areas for improvement and address any usability issues or technical glitches that may arise during the initial usage. Regular updates and bug fixes should be implemented to enhance the overall user experience. (Hajjdiab, et al., 2021)
* Awareness and Promotion: Customers can play a crucial role in spreading awareness about the apps benefits and its mission to reduce food wastage. (Doles, 2016) Encourage users to share positive experiences on social media platforms and recommend the app to friends and family. (Jacob-Puchalska, 2023) By increasing awareness and usage, more surplus food can be saved from going to waste and made available to those in need. (Anon, 2017)

1. **Future Developments and Expansions:**

* Enhanced Features and Personalization: Continually improve the apps functionality by incorporating additional features that cater to user preferences. (Kate, 2023) This could include personalized recommendations based on dietary preferences, notifications for expiring food items, and integration with loyalty programs or rewards for frequent users. (Mandaha, 2021)
* Collaboration with Additional Retailers and Organizations: Expand partnerships with more retail stores, cafés, and restaurants to increase the availability of discounted food items through the app. (Newman, 2020) Additionally, establish collaborations with food banks, charities, and non-profit organizations to facilitate the donation of surplus food and further support vulnerable communities. (Erickson, 2007)
* Integration of Sustainability Metrics: Incorporate sustainability metrics within the app to provide users with information about the environmental impact of food choices. (Initiative, 2014) This could include displaying the carbon footprint or water footprint associated with different products, encouraging users to make more sustainable choices. (Anon, 2022)
* Geographic Expansion: The team would consider expanding the apps availability to other region within South Africa and potentially even to other countries facing similar food wastage challenges. (usemultiplier, 2020) This would enable a larger number of individuals to benefit from affordable food options while reducing food wastage on a broader scale. (Bluie, 2022)
* Partnerships with Government and Policy Advocacy: Collaborate with government agencies, policymakers, and organizations working on food security and sustainability initiatives. (Gifford, 2021) Advocate for policies that support the reduction of food wastage and incentivize participation from retail partners through tax exemptions or other incentives.

(marjot, 2021)

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