**CHAPTER THREE**

**METHODOLOGY**

**3.1 Research Design**

The design of this study is primarily **applied research**, aimed at solving a practical problem within the retail sector by developing a personal finance tracker for customers of Elvira Global Supermarket. The study is **descriptive** in nature, as it aims to design and evaluate a web-based system for personal finance management that integrates with the supermarket’s existing loyalty program. The research will adopt a **mixed-methods approach**, combining both qualitative and quantitative techniques to gather data and analyze the solution’s effectiveness.

This research will be conducted in two phases: the first will focus on gathering system requirements and designing the website, while the second will involve system implementation, testing, and user feedback collection.

**3.2 Population and Sampling**

The target population for this study consists of **customers of Elvira Global Supermarket**, with a diverse demographic base. A sample of **50–100 customers** will be selected through **random sampling**, ensuring that different age groups, income levels, and shopping habits are represented.

In addition to customers, **supermarket staff** (managers, cashiers, and customer service representatives) will also be part of the study. These participants will be selected using **purposive sampling**, as their insight into customer behavior and existing loyalty programs will be crucial to understanding the needs for the finance tracker.

**3.3 Data Collection Methods**

Data will be gathered through the following methods:

1. **Literature Review**: A review of existing research on personal finance management tools, digital retail systems, and customer behavior in supermarkets will be conducted. This will help establish a theoretical foundation for the design and development of the web-based finance tracker.
2. **Surveys/Questionnaires**: Structured questionnaires will be distributed to customers to collect data on their current financial management practices, use of loyalty programs, and expectations from a personal finance tool. The surveys will combine quantitative and qualitative questions to gain both statistical insights and personal feedback.
3. **Interviews**: Semi-structured interviews will be conducted with supermarket staff to explore their knowledge of customer needs, the effectiveness of the loyalty program, and any challenges in customer engagement and retention. The interviews will also identify operational requirements for the finance tracker website.
4. **System Design and Development**: Data will also be collected during the design and development stages of the website. User stories and system requirements will be developed based on the customer and staff feedback gathered in the earlier phases.
5. **Usability Testing**: After the website is developed, usability testing will be performed with a sample of customers to assess the effectiveness of the system in helping them manage their budgets, track expenses, and integrate with the loyalty program. Participants will be observed performing key tasks on the website, and feedback will be collected through follow-up surveys.

**3.4 Research Instruments**

The following instruments will be used for data collection:

1. **Questionnaire**: A structured questionnaire will be designed to assess customer behaviors, preferences, and expectations related to personal finance tracking and loyalty programs. The questionnaire will include a mix of Likert scale questions, multiple choice, and open-ended questions to gather both quantitative and qualitative data.
2. **Interview Guide**: A set of open-ended questions will guide interviews with supermarket staff. These questions will explore the operational challenges they face, how the finance tracker might improve customer engagement, and the potential impact of the integration with the loyalty program.
3. **System Prototype**: A web-based prototype of the Elvira Finance Tracker will be developed using **HTML**, **CSS**, **JavaScript**, and **MySQL** for backend data storage. This prototype will be tested with real users to gather feedback on usability, functionality, and integration with the supermarket's systems.
4. **Usability Testing Protocol**: A usability testing protocol will be created to ensure that customers can easily navigate the website and perform necessary tasks such as budget creation, expense tracking, and receiving alerts. Participants will be tasked with specific actions, and feedback will be gathered to improve the user experience.

**3.5 Data Analysis Techniques**

The data collected from the study will be analyzed using both qualitative and quantitative methods:

1. **Quantitative Data Analysis**: Data from the customer surveys will be analyzed using **descriptive statistics** (frequencies, percentages, means, and standard deviations). This will provide insights into customer financial behaviors, preferences for finance management tools, and their experiences with loyalty programs. **SPSS (Statistical Package for the Social Sciences)** or **Microsoft Excel** will be used for the analysis.
2. **Qualitative Data Analysis**: The data from interviews and open-ended survey responses will be analyzed using **thematic analysis**. This process will identify recurring themes related to customer needs, user expectations, and potential challenges for integrating a finance tracker with the supermarket’s loyalty program. Software such as **NVivo** will be used for coding and categorizing qualitative responses.
3. **Usability Testing**: The results from usability testing will be analyzed by examining **task completion rates**, **error rates**, and **user satisfaction**. Metrics such as **task efficiency**, ease of navigation, and overall experience will be assessed to gauge the website’s usability and user-friendliness. Feedback will be incorporated into iterative design updates.

**3.6 Website Development and Implementation**

The development of the Elvira Finance Tracker website will follow an **Agile development** methodology, which emphasizes flexibility and iterative progress. The development process will include the following phases:

1. **Requirement Analysis**: Data gathered from customer surveys, interviews, and the literature review will be analyzed to identify key requirements for the website. This will include essential features such as budgeting tools, expense tracking, real-time alerts, and integration with the supermarket’s loyalty program.
2. **Website Design**: The website will be designed with a user-friendly interface that prioritizes accessibility and ease of use. The design will focus on clear navigation, mobile responsiveness, and seamless integration with Elvira’s loyalty program. **Wireframes** and **mockups** will be created to outline the layout and functionality of the site.
3. **Website Development**: The development will involve coding the website using **HTML** for structure, **CSS** for styling, and **JavaScript** for interactivity. The backend will be built using **MySQL** for database management, and **PHP** or **Node.js** may be used for server-side scripting. The website will be integrated with the supermarket's loyalty program through **API calls**, enabling real-time tracking of customer spending and rewards.
4. **Testing and Deployment**: The website will undergo several rounds of testing, including **unit testing**, **system testing**, and **user acceptance testing (UAT)**. The goal is to ensure that the site functions as expected, is free from bugs, and provides a smooth user experience. Once testing is complete, the website will be deployed for live use.

**3.7 Ethical Considerations**

Ethical considerations will be integral throughout the study:

1. **Informed Consent**: All participants (customers and supermarket staff) will be informed of the study's purpose, the data collection methods, and their right to participate voluntarily. Consent will be obtained in writing before participation.
2. **Privacy and Confidentiality**: Customer data, including financial information, will be kept confidential. The website will comply with relevant data protection laws and ensure that personal data is securely stored and used only for the purposes of this study.
3. **Transparency and Objectivity**: The study will maintain transparency and objectivity, with findings reported honestly and without bias.

**3.8 Limitations of the Study**

Despite the comprehensive nature of the research, several limitations exist:

1. **Sample Size**: The study may be constrained by the sample size, as a larger sample would provide more reliable and generalizable results.
2. **Technological Constraints**: Integration with the supermarket’s loyalty program may present technical challenges, especially if the program uses legacy systems or proprietary technologies.
3. **Time Constraints**: The development and testing phases may be limited by time, which could restrict the inclusion of more advanced features in the final website.