BUSINESS ANALYISIS PROJECT 301B

DEPARTMENT 0F

INFORMATION SYSTEM

FUCULTY OF

ACCOUNTING AND INFORMATICS

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INTRODUCTION

Garment Division (GD) is a small, well-established fashion retail business known for its unique products and personalized customer service. However, GD is facing challenges because it does not have an online customer points system. Instead, it relies on a manual system to track points, which can lead to errors and dissatisfaction among customers and staff. This assignment aims to support the implementation of an online customer points system at GD. By addressing these challenges and using technology, GD hopes to improve efficiency, enhance customer service, and support its goals for sustainable growth and competitiveness in the fashion retail industry.

Purpose of the Report

This report identifies problems in the Garment Division’s customer record-keeping system at IT Tech LLC. The current method, using physical cards and stickers, is inefficient and affects productivity and customer satisfaction. We explore different technological solutions to improve this system and provide a cost benefit analysis to help the division choose the best option within budget. We examine three approaches: outsourcing, in-house development, and hiring new staff, looking at costs, quality, and risks. We recommend outsourcing as the best choice and outline important decisions for managers and stakeholders to ensure successful implementation.

2. MEASURING SOLUTION PERFOMANCE

Garment Division's new online customer points system is aimed at improving customer satisfaction by eliminating the risk of losing accumulated points, simplifying the redemption process, and enhancing the overall shopping experience. This solution also aims to improve operational efficiency within the company. This evaluation plan will detail how to measure the performance of the new system in meeting these goals, assessing both customer satisfaction and organizational benefits.

The new system aims to achieve objectives include Improving Customer Experience that Offer a seamless, easy-to-use digital system for tracking and redeeming points. Increase Customer Retention and Loyalty that ensure customers continue shopping at Garment Division through a reliable rewards program. Enhance Operational Efficiency such as streamlining the points system management for administrators and staff, reducing errors and manual effort. Data-Driven Insights, Leverage customer data for targeted marketing and promotions.

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BUSINESS REQUIREMENT	DESCRIPTION	KEY PERFOMANCE INDICATORS
BRA1- Commitment to High-Quality Clothing at Low Prices via Discount Points	• GD live to fulfil the commitment of selling high • quality clothing at low prices by discount point.	• Percentage of sales attributed to points redemption. • Number of customers using points in-store or online to purchase discounted items. • Increase in repeat purchases due to points-based discounts.
BRA2 GD objectives is to always retain their customer,	• Customer Retention Through Loyalty Program	• Customer retention rate (year-on-year comparison of returning customers).

for their different clothing needs through a loyalty program		• Average customer lifetime value (LTV) before and after the implementation of the new system. • Percentage of active loyalty program members who make a purchase within a given period.
BRA3 GD aim to drive advocacy and referrals. Better customer insight through customer data and feedback. To improve product development and cost efficacies	• drive Advocacy and Referrals • Better Customer Insight Through Data and Feedback	• Net Promoter Score (NPS) to measure customer advocacy and willingness to recommend GD. • Number of new customers referred by loyalty program members. • Social media engagement and positive mentions about the loyalty program and discounts. • Volume of customer feedback received through the loyalty system (surveys, reviews). • Customer segmentation accuracy based on spending habits and purchase history from points data
BRA4 GD system will integrate with the stores POS system to track	• system Integration with POS for Tracking Purchases and Assigning Points	• Increase in targeted promotions or personalized offers derived from customer data.

purchase and assign points		• Percentage of transactions successfully tracked and assigned points via the POS system. • Number of customer complaints related to point assignment issues. • Accuracy of point assignment (cross-checked with manual audits, if any).
BRA5 GD system will send notification about promotions or offers that can earn extra point	• Sending Notifications About Promotions or Offers to Earn Extra Points	• Reduction in unsold inventory because of better demand forecasting from customer points data. • Product return rate before and after implementing data-driven product adjustment. • Cost savings in marketing and promotions due to targeted loyalty program efforts.

WHAT ARE WE MEASURING (FUNCTIONAL REQUIREMENTS)
FR1: User Must Be Able to Log in Once They Have Successfully Created an Account Login success rate and user experience
FR2: User Must Be Able to Create and Update Their Accounts Success rate and ease of account creation and updates.
FR3: Different End-User Must Be Able to Sign In Ability for different types of users (customers, managers, staff) to log in.
FR4: System Must Automatically Update Earned Points Each Time Loyalty Card Is Used Accuracy and timeliness of points updating.
FR5: User Must Be Able to See Their Current Balance in Rands Display accuracy of loyalty points balance.
FR6: Website Must Be Able to Show Current In-Store Sales Real-time accuracy of sales information displayed.
FR7: User Should Be Able to Track Their Purchase History Completeness and accuracy of purchase history records.
FR7: User Should Be Able to Track Their Purchase History Completeness and accuracy of purchase history records.
FR8: User Must Be Able to Track Redeemed Points Accuracy of points redemption history.
FR9: Customer Must Be Able to Use Their Points to Get a Discount Ability to redeem points for discounts during purchase.

FR10: Website Must Have Helpdesk with Working Contact Information Responsiveness and effectiveness of the helpdesk.
FR11: End-User Must Be Able to Give Their Feedback User feedback functionality and responsiveness to feedback.
FR12: Manager Should Be Able to Access User Activity Ability for managers to view user activity reports
FR13: All User Information Should Be Securely Encrypted Data security and encryption standards.
FR14: System Should Be Able to Detect Any Illegal Activities Detection of fraudulent activities or security threats.

HOW ARE WE GOING TO MEASURE (FUNCTIONAL REQUIREMENTS)
FR1User Must Be Able to Log in Once They Have Successfully Created an Account Monitor login attempt success rates and user session times. Measure any complaints or helpdesk requests related to login issues.
FR2: User Must Be Able to Create and Update Their Accounts Track the number of successful and failed account creation attempts, and monitor the time taken to complete these processes. Conduct user surveys to assess the ease of use.
FR3: Different End-User Must Be Able to Sign In Ensure that different user roles can log in and access the appropriate areas. Track the number of sign-in issues and their resolution time

FR4: System Must Automatically Update Earned Points Each Time Loyalty Card Is Used **How**: Monitor the time taken to update points after purchases, and track any discrepancies reported by users regarding their points. Conduct audits of points assignments to ensure accuracy.
FR5: User Must Be Able to See Their Current Balance in Rands Cross-check system balances with purchase data to ensure users are seeing the correct points-to-currency conversion in their accounts.
FR6: Website Must Be Able to Show Current In-Store Sales Track how frequently the website updates in-store sales data and measure user feedback on the accuracy of these updates.
FR7: User Should Be Able to Track Their Purchase History Compare system logs with actual transaction data to ensure all purchases are reflected accurately in users' accounts. Measure user satisfaction through feedback.
FR8: User Must Be Able to Track Redeemed Points Track discrepancies reported by customers regarding redeemed points and ensure the system accurately logs point usage.
FR9: Customer Must Be Able to Use Their Points to Get a Discount Ability to redeem points for discounts during purchase. Track how often users successfully redeem points at checkout and measure the number of reported issues with redeeming points.
FR10: Website Must Have Helpdesk with Working Contact Information Responsiveness and effectiveness of the helpdesk. Monitor helpdesk response times, resolution times, and the number of inquiries handled. Collect feedback from users on the quality of helpdesk support.
FR11: End-User Must Be Able to Give Their Feedback

Track the number of feedback submissions and how frequently feedback leads to system improvements or responses. Measure the time taken to acknowledge user feedback.
FR12: Manager Should Be Able to Access User Activity Monitor the number of reports generated and ensure managers can access and view relevant data easily. Track any issues reported with accessing user activity data.
FR13: All User Information Should Be Securely Encrypted . Perform regular security audits to ensure compliance with encryption standards. Measure system vulnerabilities and incidents of unauthorized data access**.**
FR14: System Should Be Able to Detect Any Illegal Activities. Monitor the system's ability to flag suspicious transactions or behaviour. Track the number of fraud cases detected and prevented, and review the time taken to respond to these incidents.

WHAT ARE WE MEASURING (NON-FUNCTIONAL REQUIREMNETS)
NFR1: Scalability • **What are we measuring?** The system's ability to handle increased online traffic without degradation in performance.
NFR2: Performance • **What are we measuring?** The overall system performance to ensure that all required functionalities are running smoothly.
NFR3: Security • **What are we measuring?** The system's ability to protect customer sensitive information (e.g., points, personal data) and its regularity of system security checks.

NFR4: Usability • **What are we measuring?** The ease of navigation and user-friendliness of the system.
NFR5: Reliability (99.99% Uptime) • **What are we measuring?** The system’s uptime and availability.
NFR6: Portability • **What are we measuring?** The system's ability to be deployed in different environments (e.g., across multiple devices or platforms).
NFR7: Maintenance • **What are we measuring?** The ease of maintaining and updating the system.
NFR8: Referral Program • **What are we measuring?** The ability of users to refer friends to the loyalty program.

HOW ARE WE GOING TO MEASURE (NON-FUNCTIONAL REQUIREMENT)
NFR1: Scalability • **How are we going to measure?** Load testing during peak usage periods and analysing the system's performance metrics, including user session handling and resource usage under high-traffic conditions.
NFR2: Performance • **How are we going to measure?** Continuous system performance monitoring using tools that track latency, error rates, and operational throughput.
NFR3: Security • **How are we going to measure?** Periodic security audits, penetration testing, and monitoring for potential data breaches or unauthorized access attempts
NFR4: Usability • **How are we going to measure?** Conduct user experience (UX) testing and collect feedback from a sample group of customers and staff. Usability scores and error rates in navigation will provide insights into user satisfaction
NFR5: Reliability (99.99% Uptime) • **How are we going to measure?** Uptime will be measured using automated monitoring tools to track system availability and report any downtime events. Aim for 99.99% availability.
NFR6: Portability • **How are we going to measure?** Testing system deployment on various operating systems, devices (mobile, desktop), and browsers to ensure cross-platform functionality.

NFR7: Maintenance • **How are we going to measure?** By tracking the frequency and complexity of updates, as well as the time required to deploy patches or perform system maintenance.
NFR8: Referral Program • **How are we going to measure?** By tracking the number of successful referrals, analysing referral conversion rates, and monitoring user feedback regarding the referral feature.

WHAT ARE WE MEASURING (TRANSICTIONAL REQUIREMNTS)
TR1: Data Migration • **What are we measuring?** The accuracy and completeness of data transferred from the old manual loyalty card system to the new online system.
TR2: Staff Training • **What are we measuring?** The effectiveness of staff training on the new system.
TR3: System Integration • **What are we measuring?** The successful integration of the new online system with other existing systems (e.g., POS).
TR4: Deployment and Rollout • **What are we measuring?** The smoothness of the system's deployment across all stores and platforms.

HOW ARE WE GOING TO MEASURE (TRANSICTIONAL REQUIREMENTS)
TR1: Data Migration • **How are we going to measure?** Conduct data integrity checks before and after migration to ensure no data is lost or corrupted during the transition.
TR2: Staff Training • **How are we going to measure?** By conducting post-training evaluations and tracking the number of system-related support queries from staff after the rollout.
TR3: System Integration • **How are we going to measure?** Monitor the integration process and ensure data flows seamlessly between the systems. Any integration errors or failures will be logged and analysed.
TR4: Deployment and Rollout. • **How are we going to measure?** Track deployment timelines, identify bottlenecks, and gather feedback on any technical issues encountered during the rollout

Test Planning

structure of the test planning based on volume, sample size, frequency, timing, data collection, currency, and survey design for each stakeholder in order to develop a strong test plan for assessing the loyalty card system across various stakeholders for garment division. This is an in-depth analysis of the test plan:

Volume and Sample Size

Customer

- Sample size: A minimum of 100–200 customers, a combination of new and loyal shoppers.
- Volume: Aim for a sample that is representative of several customer categories, such as age groupings, gender, and purchase patterns.

Managers

- Sample Size: At least five to ten managers from garment division who are relevant should be included.
- Volume: To obtain a range of viewpoints, include a variety of responsibilities (marketing manager, operations manager, and store manager).

Customer Representative

- Sample Size: Ten to fifteen customer representatives. minimum.
- Volume: ensure they stand in for the online and in-store support personnel.

Administrator

- Sample Size: At least three to five administrators who are directly involved in the loyalty card system should be included.
- Volume: Pay attention to those who manage backend processes   and data.

Frequency and timing

Customer

- Frequently: For new customers, surveys should be performed following every loyalty card purchase; for returning customers, surveys should be carried out every two months.
- Timing: It is preferable to gather data right away following a system engagement.

Managers

- Frequency: Regular check-ins every month to get input on how well the system is working and whether it is in line with company objectives.
- Timing: Following an analysis of the monthly statistics on sales and customer interaction.

Customer Representatives

- Frequency: On a weekly basis during the pilot phase, then monthly.
- Timing: After the peak shopping hours to get information on interactions with customers.

Administrator

- Frequency: Initially, bi-weekly; after that, quarterly.
- Timing: Instantly following maintenance checks or system updates.

Currency

- Currency reflects how current and relevant the info is. Make ensure that the data gathered is as up to date as feasible:
- Customers: Gather information as soon as they engage with the loyalty program to get new insights.
- Managers: Information from the most recent sales cycles should be compiled and given.
- Customer Representatives: Get input as soon as you can to better understand the needs and concerns of your customers.

- Administrators: Information should be up to date with respect to technical problems and system performance.

Data collection

- Data collection will be completed by using survey and questionnaires tailored to each stakeholder.

Survey questions

Customer

- In what way was it simple to register for the loyalty card program?
- How often do you make shopping with your loyalty card?
- Are you happy with the perks and prizes that the loyalty card offers?
- Have there been any problems utilizing the loyalty card online or in-store?
- Would you suggest others join our loyalty program? Why not, and why not?

Manager

- What is the effect of the loyalty card system on consumer engagement and retention?
- Can you successfully track and evaluate the performance of your loyalty cards?
- How may the loyalty card program be improved, in your opinion?
- What degree of alignment exists between our sales and marketing strategies and the loyalty program?
- Does the implementation of the loyalty scheme provide any operational challenges?

Customer representative

- Regarding the loyalty card system, how often do clients have questions?
- Which loyalty card problem do users encounter most frequently?
- Are tools sufficient to support the loyalty program?
- To what extent is customer service made easy while answering questions about loyalty cards?

- What adjustments may be made to the loyalty program to enhance the user experience?

Administrator

- What is the backend infrastructure's reliability for the loyalty card system?
- Have you had any difficulties managing or entering data for the loyalty card system?
- How frequently do you need to debug the system?
- Are system upgrades and upkeep carried out effectively?
- What technological enhancements would you suggest for the loyalty program?

3.ANALYSIS OF PERFORMANCE MEASURES

How can we measure and compare BR **This includes evidence required and Data Collection Methods**
BRA 01: High-Quality Clothing at Low Prices through Loyalty Rewards Points
-**Baseline**: Aim is for GD Live to fulfil the promise of offering high-quality clothing at affordable prices, enhanced by a rewards point system.
- KPI: Total number of loyalty rewards points earned and redeemed.
- **How to check**: Monitor customer transactions and points earned based on purchases.
- What to look for: Customers should be consistently earning points for eligible purchases, which they can redeem for discounts.
- Evidence Required: · Transaction logs showing loyalty points awarded. · Analytics reports of point redemptions. · Customer feedback on the value of earned points. · Sales performance metrics linked to the point system.

BRA 02: Customer Retention through Loyalty Program
- **Baseline**: Aim is for GD to retain customers by fulfilling their varied clothing needs through a robust loyalty program.
- KPI: Customer retention rate and loyalty program engagement.
- **How to check**: Analyse customer retention trends and loyalty program participation data.
- **What to look for**: Higher rates of returning customers and engagement with the loyalty program.
- **Evidence Required**: · Reports on loyalty program membership growth. · Retention rate analysis for customers enrolled in the program. · Surveys on customer satisfaction with loyalty benefits. · Monthly reports on program participation and purchase frequency.
BRA 03: Driving Advocacy, Referrals, and Product Insight
- **Baseline**: Aim is for GD to encourage customer advocacy and referrals while improving product development through customer feedback and insights.
- KPI: Number of customer referrals and feedback submissions.
- **How to check**: Monitor referral rates and analyse feedback gathered through the system.
- **What to look for**: Increased customer referrals, with insights used to drive product improvements and cost efficiency.
- **Evidence Required**: · Reports on customer referral program participation. · Feedback and suggestion logs from customers. · Analysis reports linking feedback to product changes. · Cost analysis reports showing the impact of customer-driven efficiencies.
BRA 04: Integration with POS System to Track Purchases and Assign Points

- **Baseline**: Aim is for the GD system to seamlessly integrate with the store's POS system to track customer purchases and assign loyalty points.
- KPI: Successful tracking and assignment of points through POS integration.
- **How to check**: Test the integration of the loyalty system with the POS for accuracy in tracking and point allocation.
- **What to look for**: Purchases should be correctly tracked, and points should be automatically assigned without errors.
- **Evidence Required**: · Logs of purchases tracked via the POS system. · Test case results verifying point allocation for purchases. · Integration test reports confirming smooth operation. · Feedback from store staff on the ease of POS integration.
BRA 05: Promotion Notifications for Earning Extra Points
- **Baseline**: Aim is for the GD system to send timely notifications to customers about promotions or offers where they can earn extra points.
- KPI: Number of notifications sent and customer engagement with promotions.
- **How to check**: Monitor notification logs and track the engagement rate of customers with promotional offers.
- **What to look for**: Customers should receive notifications in a timely manner, and promotions should lead to an increase in point earnings.
- **Evidence Required**: · Notification delivery reports with timestamps. · Analytics showing customer engagement with promotional offers. · Sales performance during promotional periods. · User feedback on the relevance and timing of notifications.

How can we measure and compare FR **This includes evidence required and Data Collection Methods**
FR 01: User Registration
- **Baseline**: Aim is for users to be able to sign up for the system.
- **KPI**: Successful account creation.
- **How to check**: Test the sign-up process using both valid and invalid inputs.
- **What to look for**: Users should be able to complete the registration and receive appropriate confirmations.
- **Evidence Required**: · Logs of new user registrations. · Confirmation emails sent to new users. · Feedback from users regarding the registration experience. · Results from A/B testing to improve the registration flow.
FR 02: Login/Logout
- **Baseline**: Aim is for users to log into and out of the system securely.
- **KPI**: Successful login and logout attempts.
- **How to check**: Test login and logout functions with both correct and incorrect credentials.
- **What to look for**: Users should be able to log in, maintain active sessions, and log out without issues.
- Evidence Required: · User session records. · Logs of both successful and failed login attempts. · Reports from security tests on session management. · User feedback about login and logout processes.

FR 03: Role Management
- **Baseline**: Aim is for the system to effectively manage various user roles (e.g., admin, standard user).
- **KPI**: Proper role assignment and enforcement of permissions.
- **How to check**: Create users with different roles and confirm access controls.
- **What to look for**: Permissions are correctly enforced based on the user's role.
- **Evidence Required**: · Logs documenting role assignments and access. · Results from access control tests. · Security audit reports focusing on role management. · Feedback from users on role-specific access and permissions.
FR 04: Point Accumulation
- **Baseline**: Aim is for users to accumulate points through specific activities (e.g., purchases).
- **KPI**: Accurate calculation of points.
- **How to check**: Make purchases and verify points are added correctly.
- **What to look for**: Points should accurately reflect the user's actions and be displayed properly.
- **Evidence Required**: · Logs of point accumulations per transaction. · Test case results confirming accurate point allocation. · Transaction receipts indicating point accumulation. · User feedback on the accuracy of point earnings.

FR 05: Point Display
- **Baseline**: Aim is for users to be able to sign up for the system.
- **KPI**: Correct display of earned points.
- **How to check**: Perform activities that earn points and verify the balance is updated.
- **What to look for**: The displayed balance should be accurate, reflecting both earned and redeemed points.
- **Evidence Required:** · Screenshots showing point balances. · Logs confirming accurate updates to point balances. · User feedback regarding the clarity of point display. · Results from performance tests ensuring quick display updates.
FR 06: Sales Listing
- **Baseline**: Aim is for users to browse available items or services that can be purchased with points.
- **KPI**: Accurate and current product listings.
- **How to check**: Review the product catalogue to ensure completeness and currency.
- **What to look for**: All available items, along with their point requirements, should be correctly displayed.
- **Evidence Required**: · Screenshots of the sales catalogue. · Logs documenting product updates. · User feedback on the ease of locating products.

· Inventory tracking logs for available rewards.
FR 07: Purchase History
- **Baseline**: Aim is for users to access a record of their previous purchases and point deductions.
- **KPI**: Accuracy of displayed purchase history.
- **How to check**: Complete purchases and verify they are accurately reflected in the user's history.
- **What to look for**: All transactions should be listed with the correct details.
- **Evidence Required**: · User transaction history logs. · Screenshots of purchase history pages. · Receipts for completed transactions. · User feedback on the accuracy of purchase records.
FR 08: Redemption History
- Baseline: Aim is for users to view the history of their points redeemed for rewards.
- **KPI**: Correct display of redeemed points and corresponding rewards.
- **How to check**: Redeem points and ensure the transaction is logged correctly.
- **What to look for**: All redemption transactions should be displayed accurately in the user's account.
- **Evidence Required:** · Logs tracking points redemptions. · Screenshots of user redemption histories.

· User feedback regarding the redemption process. · Reports identifying any discrepancies in redemption records.
FR 09: Points at Checkout
- **Baseline**: Aim is for users to apply points for discounts when making a purchase.
- **KPI**: Accurate point deductions and application of discounts.
- **How to check**: Complete purchases using points and verify that deductions and discounts are applied correctly.
- **What to look for**: Points should be deducted properly, and corr (Anon., 24)esponding discounts should be reflected in the final total.
- **Evidence Required**: · Transaction logs showing point deductions at checkout. · Screenshots or receipts indicating discounts applied. · User feedback on ease of using points at checkout. · Audit reports ensuring accuracy in discount application.
FR 10: Help Desk
- **Baseline**: Aim is for users to access assistance and support for issues related to the rewards system.
- **KPI**: Response times and resolution rates for help desk inquiries.
- **How to check**: Submit support tickets and monitor response times and resolution effectiveness.
- **What to look for**: Inquiries should receive prompt and effective responses.
- **Evidence Required**:

· Help desk ticket logs. · User satisfaction surveys regarding support. · Reports on response and resolution times. · Performance metrics for the help desk team.
FR 11: Feedback Submission
- **Baseline**: Aim is for users to provide feedback on their experience with the rewards system.
- **KPI**: Volume and quality of submitted feedback.
- **How to check**: Submit feedback and review the system's ability to capture and categorise it.
- **What to look for**: Feedback should be collected successfully, and users should receive appropriate acknowledgments.
-Evidence Required: · Logs of feedback submissions. · Acknowledgment messages sent to users. · Feedback categorised by issue type and severity. · Metrics on response times to feedback.
FR 12: User Insight
- **Baseline**: Aim is for the system to offer insights into user behaviours and preferences.
- **KPI**: Availability and accuracy of user analytics.

- **How to check**: Review data on user behaviour, such as the most redeemed rewards or the points earned.
- **What to look for**: Analytics should provide useful insights into how users interact with the system.
- **Evidence Required**: · Analytics reports generated from user behaviour. · Dashboards visualising user trends. · Reports analysing user preferences and reward trends. · Business intelligence reports based on collected insights.
FR 13: Data Encryption
- **Baseline**: Aim is for all user data, especially sensitive information, to be securely encrypted.
- **KPI**: Adherence to encryption standards (e.g., AES-256).
- **How to check**: Review encryption methods and conduct audits on encrypted data.
- **What to look for**: Sensitive data should be securely stored and transmitted.
- **Evidence Required**: · Encryption audit reports. · Certificates of compliance with encryption standards. · Results from testing encryption algorithms. · Logs of any security breaches or potential vulnerabilities.

FR 14: Fraud Prevention
- **Baseline**: Aim is for the system to identify and prevent fraudulent activities (e.g., points manipulation).
-**KPI**: Number of detected and blocked fraud attempts.
- **How to check**: Simulate fraudulent activity and observe the system's response.
-**What to look for:** The system should flag and prevent suspicious actions.
- **Evidence Required**: · Logs of detected fraud attempts. · Security reports detailing fraud prevention measures. · Reports on suspicious user accounts. · Results from penetration tests focused on fraud detection.

How can we measure and compare NFR **This includes evidence required and Data Collection Methods**
NFR 01: Response Time
-Baseline: Aim is for the system to respond within 3 seconds for 10,000 concurrent users.
- KPI: Average response time.
- **How to check**: Use performance testing tools.
- **What to look for**: Average response time should be under 3 seconds during peak usage.
- **Evidence Required**: · Performance test reports showing response times. · User feedback surveys regarding responsiveness.
NFR 02: Scalability
- **Baseline**: Aim is for the system to support at least 20,000 concurrent users.
- **KPI:** maximum concurrent users supported.
- **How to check**: Conduct load testing by increasing user load incrementally.
- **What to look for**: System should scale to accommodate at least 20,000 users without significant performance drop.
- **Evidence Required**: · Load testing results documenting user capacity. · System performance graphs showing stability under increased load.

NFR 03: Performance
- **Baseline**: Aim is for key operations to complete within defined time limits.
- **KPI**: Operation completion time.
- **How to check**: Monitor system performance metrics under different loads.
- **What to look for**: Key operations (e.g., point redemption) should complete within specified time limits.
- **Evidence Required**: · Performance monitoring reports detailing operation times. · Transaction logs highlighting completion times.
NFR 04: Security
- **Baseline**: Aim is for compliance with industry security standards (e.g., PCI DSS).
- **KPI**: Number of vulnerabilities found.
- **How to check**: Perform regular security audits and penetration tests.
- **What to look for**: Compliance with security standards and no critical vulnerabilities.
- **Evidence Required**: · Security audit reports and vulnerability assessment results. · Records of penetration testing findings and remediation efforts.
NFR 05: Usability
- **Baseline**: Aim is for a user satisfaction score of at least 80%.

- **KPI**: User satisfaction score.
- **What to look for**: A user satisfaction score of at least 80% in usability surveys.
- **Evidence Required**: · Usability test results and feedback summaries. · User interface review documentation.
NFR 06: Reliability
- **Baseline**: Aim is for 99.9% uptime with minimal critical errors.
- **KPI**: Uptime percentage.
- **How to check**: Monitor system uptime and error rates.
- **What to look for**: Achieve 99.9% uptime with minimal critical errors reported.
- **Evidence Required**: · Uptime logs and error rate reports. · Incident reports detailing downtime events and resolutions.
NFR 07: Portability
- **Baseline**: Aim is for successful deployment across multiple environments.
- **KPI**: Deployment success rate.
- **How to check**: Test system deployment on different environments (e.g., cloud vs. on-premises).
- **What to look for**: Successful deployment without major modifications in different environments.
- **Evidence Required**:

· Deployment documentation and test results from different environments. · Compatibility assessment reports for different platforms.
NFR 08: Maintenance
- **Baseline**: Aim is for maintenance tasks to be completed within agreed time frames (e.g., 24 hours for critical bugs).
- **KPI**: Average maintenance response time.
- **How to check**: Evaluate time taken for system updates and bug fixes.
- **What to look for**: Maintenance tasks should be completed within agreed time frames.
- **Evidence Required**: · Maintenance logs and response time reports for updates. · Change management documentation.
NFR 09: Referral Program
- **Baseline**: Aim is for at least 15% user engagement in the referral program.
- **KPI**: Participation and conversion rates.
- **How to check**: Monitor participation and conversion rates of the referral program.
- **What to look for**: At least 15% of users should engage with the referral program and convert to new users.
- **Evidence Required**: · Metrics and analytics report detailing program participation and conversions. · Feedback from users on the referral process.

Checking Solution Effectiveness

- **Sales Growth**: To determine whether the card is responsible for any increases in revenue, compare sales data collected before and after the program's debut.
- **Customer Engagement**: Monitor the card's active user count over time. An increase in active users indicates productive interaction.
- **Redemption Rates**: The proportion of points that are redeemed over those that are issued.
- **Customer Satisfactions**: To monitor if the customer they are satisfied with point card system

Alignment with organisation value

- **Customer Input**: Gather customer input on how the point card system is working on a regular basis. To find out if they believe the system matches the company's values-such as integrity and customer-centricity-use surveys or interviews.
- **Analyse customer point redemptions**: keeping track of when and how they happen. Examine if redemption trends align with company ideals, such as encouraging sustainability or community involvement.
- **Value-Based Incentives**: Make sure that activities that support company values-like making sustainable purchases, referring others, or attending community events-earn points. Calculate the percentage of participants in these programs.
- **Customer Retention Rates**: Examine loyalty and retention data both before and after the point card system is put into place. A favourable shift can suggest improved alignment with customer-focused ideals.

1.Volume or Sample Size:
Identify the Population: Determine how many people are utilising the point card system overall.
Calculate the Sample Size: Calculate the number of users to poll using a statistical technique to get accurate results.
2.Frequency or Timing:
-Determine the average amount of transactions made by each user over a defined time frame (weekly, monthly, etc.).
-Find out what proportion of users use their points for redemption within a given period after obtaining them.
-Analyse the typical time it takes to complete a transaction (e.g., from initiation to confirmation).
-Examine transaction peak hours to find trends in user interaction.
3.Currency:
Total Points Issued: The total amount of points that users have received over time.
Redemption Rate of Points: The proportion of issued points that are used for redemption.
-The quantity of points that expire unutilised is known as the expiration rate.

Meeting Project Expectation (Cost-Benefit Analysis)

Cost Benefits Analysis: comparing the development and maintenance of the point card system with the actual costs. Based on variables such as customer retention, calculate the return on investment (ROI).

Determine Cost:

- **Costs of Implementation:** Determine how much technology, marketing, and training will cost in the earliest stages of creating and implementing the point card system.
- **Operational Costs**: Determine recurring expenses for things like system upkeep, customer support, and point redemption.
- **Determine Benefit:**
- **Sales Growth**: Monitor the sales increase that the point card program is responsible for. Revenue before and after adoption should be compared.
- **Customer Engagement:** Assess point system participation rates, including enrolment and redemption frequency.

Associated Risk

Risks associated with operations:

- **System Reliability:** Evaluate the possibility that the system may be compromised by technical malfunctions or data breaches.
- **Compliance Risks:** Make sure that data protection laws are followed, especially when it comes to processing consumer data.
- System Downtime: the length and frequency of the system's absence may cause some risk within the business
- **Fraud Risk Evaluation:**
- **Patterns of Redemption**: Keep an eye on unusual spike in point redemption that might indicate fraud.
- **Account Sharing:** Assess the extent of account sharing, which can dilute the effectiveness of the loyalty program.

New Trends

- **Sales Performance:** Examine variations in average transaction amounts and sales volume attributable to point card users as opposed to non-users.
- **Market trends**: keep abreast of new developments in the technology sector and the state of the industry. Determine whether the solution fits these trends and whether any adjustments are necessary.
- **Social Media Sentiment:** Keep an eye on user opinions and conversations about the point card system on social media.
- **Competitive Analysis:** Monitor market developments and rival products to learn how your software stacks up against and changes over time.
- **Use Trends Over Time:** Keep an eye out for trends in the way users interact with the program during various times of the year or during promotions.
- **Client segmentation:** To customise the program and track particular trends, divide the client base into several groups according to their behaviour and preferences.

Performance variances

- **Redemption Rate:** Calculate the ratio of points granted to points redeemed. A low redemption rate can be a sign that users don't think the program is worthwhile.
- **Customer Engagement:** Monitor program participation rates and usage frequency. The quantity of transactions made with the point card is included in this.
- **Performance metrics** are used to evaluate the actual performance of a system to its baseline or predicted performance. Determine any notable differences and look into the reason behind them.
- **Average Transaction Value:** Analyse changes in the average spending of customers who use the point card compared to those who do not.
- **Customer Retention Rate:** Monitor how well the program retains customers over time. Compare retention rates before and after implementing the point card system

4.CONCLUSION

The solution was assessed by outlining high priority requirements, functional & non-functional, transitional and business requirements. This assessing was done in conjunction of the business strategy and goals aimed to be achieved by the system. Key performance indicators and how each requirement will be measured were outlined to specify if the system is able to execute each requirement. The structure of the test plan is base on volume, sample size, frequency, timing, data collection and survey design for each stakeholder. This was done to develop a strong test plan for assessing the system.

Analyzing performance measures was done using numbers and comments that were assumed almost accurately to numbers expected from the solution. This was done on scalable requirements, from business requirements to each stakeholder requirement. The following was described including the baseline, which is the requirement, the KPI which measures the requirement execution. The how to check and what to look for measures were also describe in relations to each stakeholder. The evidence that will be required from each requirement was outlined this evidence that the execution had an output. The entire solution effectiveness was also measured and concluded that the system is effective.

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