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# Requirements Elicitation Plan

for

**COMSYS**

University Communication and Services Portal

**Section: TT4L**

**Group: 4**

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*One drive link containing proof of execution: [SRE Items](#)*

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# 1 Technique: Brainstorming

## 1.1 Brainstorming Preparation

Technique	Brainstorming
Subject	The specific requirements engineering context
Stakeholder(s)	Students
Mode	Virtual (Online)
Moderator	Hesham Nader
Participants	1. Danesh Veran 2. Lim Xin Yee 3. Nickleirsch

### Goals:

1. Understand student pain points with current systems.
2. Discover preferred communication methods.
3. Identify useful features they expect.
4. Learn how they currently manage academic info, alerts, and deadlines.
5. Validate assumptions made prior to the session

### Brainstorming Rules:

1. **Quantity over quality:** There should be a focus on generating as many ideas as possible without worrying about how good they are. A large pool increases the chance of finding great solutions.
2. **Free association and visionary thinking are explicitly desired:** Imaginative, futuristic, or even wild ideas must be encouraged as creativity and unfiltered thinking can lead to breakthrough insights.
3. **Taking on and combining expressed ideas is allowed and desired:** Participants can build on each other's ideas. Collaboration and synergy should be welcomed to develop stronger concepts.
4. **Criticizing other participants' ideas is forbidden:** No negative feedback or judgment should be given during the idea-sharing phase. This keeps the environment safe and open for expression.
5. **Questions for clarification are allowed:** Participants can ask questions to better understand others' ideas but should do so respectfully and without judgment.
6. **Don't stop the session if there is a long-lasting deadlock.** Stimulate the participants and overcome at least two long-lasting deadlocks: If silence or hesitation occurs, the moderator should re-energize the group and push through at least two such moments to maintain momentum.
7. **Wait until the brainstorming comes to a natural end:** Don't force a conclusion. Let the session end organically when idea flow naturally decreases.

**Topics to Explore During Brainstorming:**

1. Current challenges
2. Preferred communication channels
3. Expectations of features
4. Customization & Personalization
5. Notification Timing & Frequency
6. Integration with other tools (Google Calendar, etc.)

**Example Questions:**

1. What's one time you missed an important university update?
2. What frustrates you the most about using the current university portal?
3. If you could design your perfect student portal, what 3 things would it do?
4. Which notifications do you pay attention to?
5. What info do you wish your parents could easily access (or not)?
6. What's one tool or feature from another app you'd want added to this portal?
7. Have you ever had to rely on friends for updates or deadlines? Why?

## 1.2 Brainstorming Execution Plan

### Initial Brainstorming:

Brainstormed Requirement	Description
Personalized student dashboard	Central hub showing courses, grades, fees, Light/dark mode and movable widgets.
Graphical academic insights	Visual representation of grades, attendance, and trends.
Grade update notifications	Alerts students and optionally parents when new grades are released.
SMS for low attendance (<80%)	Notifies parents of attendance issues.
SMS summary of academic performance	Periodic updates sent to parents.
Emergency alerts via SMS	Notifies campus-wide emergencies.
Student notification "quiet hours"	Let's students pause non-critical alerts for a duration of time.
Customizable notification preferences	Allows students and parents to control what they receive and how.
SMS template management for administrators	Create and reuse standard templates.
Integration with third-party calendars	Sync academic deadlines and class schedule.
Student events & clubs' integration	View and RSVP to campus events from portal.
SMS reminders for fee deadlines	Automated multi-round reminders.
Single Sign-On (SSO)	Log in using one secure account across services.
Customizable session timeout	Users can set auto-logout time for security.
Mobile app companion	A standalone app version of the portal.
Effective portal-wide search	Quickly find pages, forms, or features.

Accessibility compliant design	Supports screen readers and WCAG standards.
Multilingual support	Interface available in multiple languages.
AI-powered personalized recommendations	E.g., study tips, reminders, events (like a Copilot).
Feature guide/help centre	Documents how to use all portal features.
Augmented reality campus map	AR-based navigation on campus.
Reliable login and password recovery	Secure system for account access restoration with email/SMS verification and challenge questions.
Role-based access control	Different permission levels for students, parents, faculty, and administrators with appropriate data access.
Real-time data synchronization	Immediate updates across all interfaces when changes are made to ensure data consistency.
Two factor authentication (2FA)	Additional security layer using SMS or authenticator apps for sensitive operations.
Secure messaging history	Encrypted storage of all communications with access controls and retention policies.
System logs and activity audit (Admin)	Comprehensive logging of all system actions with timestamps and user identification.
Graceful error handling	User-friendly error messages with clear recovery steps and system stability maintenance.

## 1.3 Brainstorming Follow-Up

### Categorized Brainstorming:

#### Usable:

1. Personalized student dashboard (customizable)
2. Graphical academic insights
3. Grade update notifications
4. SMS for low attendance (<80%)
5. SMS emergency alerts
6. Customizable session timeout and auto-logout
7. Customizable notification preferences
8. Admin: SMS template management
9. Student events & clubs' integration
10. SMS reminders for fee deadlines
11. Single Sign-On (SSO)
12. Effective portal-wide search
13. Accessibility compliant design
14. Feature guide/help center
15. Reliable login and password recovery
16. Role-based access control
17. Real-time data synchronization
18. Two factor authentication (2FA)
19. Secure messaging history
20. Confirmation for critical actions
21. System logs and activity audit (Admin)
22. Graceful error handling

#### Not decided:

1. A student notification "quiet hour"
2. Integration with third-party calendars
3. Multilingual support

#### Unusable:

1. SMS summary of academic performance
2. Augmented reality campus map
3. Mobile app companion
4. AI-powered personalized recommendations



## 1.4 Brainstorming Analysis

The initial brainstorming session yielded a diverse set of proposed functionalities intended to improve communication and user engagement in the University Communication Portal with SMS Integration. Each proposed requirement was evaluated based on feasibility, user impact, implementation complexity, and alignment with the system's primary objectives. Based on this evaluation, features were categorized as **Usable**, **Undecided**, or **Unusable**.

### 1.4.1 Usable Features

These features were deemed essential or highly beneficial to the portal's usability, security, and effectiveness. They reflect both user expectations and baseline functionality necessary for a satisfactory user experience. Many align with common standards for academic portals and communication systems.

Examples include:

- I. Personalized student dashboard with customizable widgets
- II. Graphical insights into academic performance
- III. SMS alerts for critical scenarios (e.g., low attendance, emergencies)
- IV. Secure login, session timeout, and two-factor authentication
- V. Role-based access control and real-time data synchronization

### 1.4.2 Undecided Features

These items require further analysis through user surveys, stakeholder interviews, or feasibility studies. While they may offer additional value, uncertainty exists around technical feasibility, privacy concerns, or actual demand.

Examples:

- I. Student “quiet hours” for non-critical notifications
- II. Third-party calendar integration (subject to API quotas and data sync risks)
- III. Multilingual support (requires localization planning and resource allocation)

These features are tentatively deferred and marked for detailed examination during the requirements elicitation phase.

### **1.4.3 Unusable Features**

These proposals were considered unsuitable for the current project scope due to high cost, low return on investment, or implementation challenges that outweigh their value. They may also duplicate functionality achievable through simpler means.

Examples include:

- I. Augmented reality campus map (high hardware/software complexity)
- II. AI-powered recommendations (requires large data and ML infrastructure)
- III. Mobile app companion (Out-of-scope)

These features are excluded from the initial development phase but may be revisited in future versions of the system if justified by user demand or available resources.

## 1.5 Applying Kano to Potential Requirements

### Dissatisfier:

Requirement	Justification
SMS Emergency Alerts	In an emergency, the absence of timely alerts would be extremely detrimental and lead to extreme dissatisfaction.
Accessibility Compliant Design	Accessibility is a fundamental requirement for inclusivity. Without it, the portal would fail to meet user expectation and even legal standards, leading to dissatisfaction.
Reliable Login and Password Recovery	Access to the portal must be dependable, and users must be able to recover their accounts if credentials are forgotten or lost. Failure in this regard results in users being locked out, leading to frustration, loss of trust in the system, and inability to access critical academic information. This is a fundamental expectation for any secure online system.
Role-Based Access Control	Different users (students, parents, faculty, administrators) require different levels of access to information and functionalities. Without robust and appropriate access controls, sensitive data could be exposed or misused, causing dissatisfaction, privacy breaches, and potential legal issues. This is a baseline security and privacy requirement.
Real-Time Data Synchronization	Users expect that information (grades, schedules, notifications) is current and consistent across all devices and interfaces. Delays or inconsistencies in data updates can cause confusion, missed deadlines, or erroneous actions, resulting in user dissatisfaction. Real-time synchronization is essential for trust and usability.

Two Factor Authentication (2FA)	2FA provides an additional layer of security, especially for sensitive operations. Users expect their personal and academic data to be protected from unauthorized access. Absence of 2FA increases vulnerability to breaches, causing anxiety and dissatisfaction among users who expect modern security practices.
Secure Messaging History	Storing all communications securely and enabling controlled access are critical for privacy and compliance. If messages are lost, tampered with, or accessible by unauthorized users, it undermines trust and could lead to serious privacy violations. Users expect confidential and reliable communication.
System Logs and Activity Audit for Admin	Administrators require comprehensive logs of system activity to ensure accountability, troubleshoot issues, and maintain security. Lack of audit trails can lead to undetected misuse, data integrity issues, and inability to track critical events, resulting in dissatisfaction among both admins and users.

**Satisfier:**

<b>Requirement</b>	<b>Justification</b>
Personalized Student Dashboard	Students expect an intuitive and personalized interface to access their academic and administrative information. Its absence would negatively impact satisfaction, but its presence directly improve satisfaction.
Grade Update Notifications	Students expect timely notifications about grade updates. Missing this feature would reduce satisfaction and cause extra repetitive work and time wasted.
SMS for Low Attendance	Both students and parents expect alerts for critical attendance issues. Missing this feature will introduce frustrations to parents.
SMS Reminders for Fee Deadlines	Parents expect timely reminders about financial obligations. Implementing this feature directly influences satisfaction.
Effective Portal-Wide Search	Users expect to quickly find relevant information within the portal. Absence of this feature would negatively impact satisfaction increasing the time spent to navigate the system.
Feature Guide/Help Centre	Users expect a help centre and sufficient documentation to learn about features. Its absence could reduce satisfaction.
Single Sign-On (SSO)	A seamless login experience is an important expectation. Its absence would cause dissatisfaction and multiple account management.
Customizable Session timeout and Auto-Logout	Auto-Logout is an important security expectation. A customizable session timeout duration achieves a balance of security while assuring user satisfaction.

**Delighter:**

<b>Requirement</b>	<b>Justification</b>
Admin's SMS Template Management	Often time SMS formats are unique and constantly change so templates could be a requirement not sought after.
Customizable Notification Preferences	Giving users control over notification types and methods is not expected but adds significant value. It enhances the user experience.
Student Events & Clubs' Integration	Integrating events and clubs into the portal is not a baseline expectation but it could surprise students and enhance their overall experience.

## 2 Technique: Interview

### 2.1 Interview: Preparation

Purpose	To gain detailed insight into user expectations, current challenges, and workflows.
Participants	Student, parent and lecturer
Approach	One-on-one discussions. Questions will be open-ended to allow users to express needs freely.
Effort Estimation	<ul style="list-style-type: none"><li>I. 2 students</li><li>II. 1 lecturer</li><li>III. 1 parent</li></ul> <p><i>Justification: The system's main stakeholder is the student.</i></p>
Preparation Activities	<ul style="list-style-type: none"><li>I. Create a structured interview schedule and timeline with key topics to be discussed.</li><li>II. Utilize appropriate meeting spaces for one-to-one interviews.</li><li>III. Prepare recording equipment and note-taking materials</li><li>IV. Identify role-specific question sets according to stakeholder group.</li></ul>

#### Interview Format

##### For Students:

Short introduction (1-2 minutes)

1. How do you currently keep track of your academic information (grades, billing, deadlines)?
2. What frustrates you the most about the current university communication system?
3. Can you recall a time when you missed an important university update? What happened?
4. What is your preferred method of receiving university notifications? (Email, SMS, app notifications)
5. Which notifications do you tend to pay attention to, and which do you tend to ignore?
6. How do you share university related stuff with your parents?
7. How important is having one centralised system instead of multiple different ones be to you?
8. Is there any feature you've seen in other educational platforms that you wish our university had?
9. Do you have any other suggestions or concerns you'd like to share?

**For Parents:**

Short introduction (1-2 minutes)

1. How do you currently receive information about your child's academic progress?
2. Can you recall a time when you missed important university information? What happened?
3. How do you currently manage and track university fee payments?
4. What kind of financial notifications would be most helpful to receive?
5. How would you prefer to be notified about upcoming payment deadlines?
6. What types of emergency notifications would you consider critical?
7. If you could design a parent portal, what three features would be most important to you?
8. Is there anything else you'd like to share about improving parent-university communication?

**For Lecturers:**

Short introduction (1-2 minutes):

We can start as soon as possible to not take much of your time. We are eliciting requirements for a new University Communication and Services Portal and would like to get some of your insights. First question:

1. What are the main challenges you face when communicating with students and managing your courses?
2. How do you currently communicate important course updates to your students, kindly run us through the process?
3. What types of notifications would you want to send to students automatically?
4. What information would you want automatically shared with parents?
5. How do you currently handle grade submission and academic performance tracking?
6. What challenges do you face when sharing course materials with students?
7. What existing tools or systems do you use that should be integrated into the new portal?
8. What features would make your daily teaching and administrative tasks easier?



## 2.2 Interview: Execution Plan

The interviews will be executed in a structured yet flexible manner to gather meaningful and relevant insights from participants.

### Pre-Interview Steps:

- I. Schedule interviews with all identified participants (students, parents, lecturers, administrators).
- II. Brief participants on the purpose of the study.
- III. Ensure recording equipment (audio or written) is functional and available.

### Interview Structure:

1. **Introduction (1–2 minutes):**
  - I. Brief explanation of the project's purpose.
  - II. Assure participants of confidentiality and data protection.
  - III. Obtain verbal or written consent to record or take notes.
2. **Main Discussion (5-10 minutes):**
  - I. Ask role-specific, open-ended questions (as outlined in section 2.1).
  - II. Encourage elaboration through follow-up prompts.
  - III. Record participant responses verbatim when possible.
3. **Closing (1-2 minutes):**
  - I. Summarize key points to validate understanding.
  - II. Ask if the participant has any additional input.
  - III. Thank the participant for their time and contribution.

### Execution Guidelines:

- I. Maintain a respectful and non-leading tone throughout.
- II. Allow participants to speak freely and without interruption.
- III. Use probing questions where necessary to clarify answers.
- IV. Write down key notes within the interview minute

### Interview Minute Format:

<b>Identifier</b>	INT-X
<b>Date</b>	Date
<b>Goal of the interview</b>	Elicit requirements for the University Portal by gaining detailed insights into stakeholder expectations, current challenges, and workflows.
<b>Interviewer</b>	Name
<b>Interviewee</b>	Name (Role, Organization)
<b>Notes</b>	Write down key notes during the interview

## **2.3 Interview: Follow-Up Plan**

The follow-up process ensures that collected data is accurately documented, analyzed, and translated into actionable requirements.

### **Steps in Follow-Up:**

#### **1. Transcription:**

- I. Convert recorded interviews into written transcripts for all sessions.
- II. Ensure accuracy by reviewing unclear sections with the interviewer or participant (if necessary).

#### **2. Thematic Analysis:**

- I. Group responses by stakeholder role.
- II. Identify recurring themes, pain points, needs, and suggestions.

#### **3. Requirement Extraction:**

- I. Translate thematic findings into high-level requirements.
- II. Categorize requirements into functional and non-functional groups.

#### **4. Documentation:**

Record the extracted requirements in a structured format.

## **2.4 Interview: Expected Outcomes**

The interview process is expected to elicit a range of functional and non-functional requirements by engaging directly with key stakeholders. These requirements will reflect pain points, user expectations, preferred communication methods, and desired system features for a centralized University Communication and Services Portal.

### **Expected Functional Requirements:**

#### **Dissatisfier:**

##### **1. Notification System**

The system shall support multi-channel notifications (email, SMS, in-app) for different types of updates (e.g., grades, fee deadlines, course changes, emergencies).

##### **2. Grade Tracking and Sharing**

The system shall allow lecturers to input grades and students to view them. Students shall have the option to share selected academic information with parents by giving them consent with a written signed letter.

##### **3. Billing and Payment Tracking**

The system shall allow students and parents to view payment history, upcoming deadlines, and receive reminders.

##### **4. Course Material Access**

The system shall enable lecturers to upload and organize course materials for student access.

##### **5. Custom Parent Portal**

The system shall include a parent-facing portal with access to billing info, notifications, and limited academic data (as permitted by the student).

#### **Satisfier:**

##### **1. Emergency Alerts**

The system shall allow university staff to send high-priority emergency notifications to students and parents.

##### **2. Integrated Communication Tools**

The system shall provide lecturers with tools to send announcements or updates to entire classes or individual students.

##### **3. Centralized Dashboard**

The system shall provide a unified dashboard for students, parents, and lecturers with role-based access to relevant academic, financial, and communication information.

## **Expected Non-Functional Requirements:**

### **Dissatisfier:**

#### **1. Usability**

The system shall offer a simple, intuitive interface for all user roles, with minimal training required.

#### **2. Accessibility**

The platform shall comply with accessibility guidelines to ensure usability for individuals with visual or motor impairments.

#### **3. Security & Privacy**

The system shall enforce strict role-based access and allow students to control which data parents can view.

### **Satisfier:**

#### **1. Performance**

The system shall deliver responses within 3 seconds for standard operations (e.g., checking grades, loading schedules).

#### **2. Reliability**

The platform shall operate with 99.9% uptime and ensure data is not lost during system updates or crashes.

#### **3. Scalability**

The system shall support thousands of concurrent users (students, staff, and parents) without performance degradation.

## 3 Technique: Observation

### 3.1 Observation: Preparation

Purpose	To understand how users interact with the current systems and communication methods.
Participants	Students, Parents
Approach	Observe users during real activities such as checking grades, handling billing issues, or sending updates.
Focus	Identify pain points, workarounds, and areas for improvement that users might not mention directly.

### Tasks and Use Cases

#### Student Tasks

Task	Actions to Observe
Checking Attendance	<ul style="list-style-type: none"><li>I. Navigate to attendance section</li><li>II. View attendance by course</li><li>III. View total attendance</li><li>IV. Check attendance percentage</li><li>V. Identify any missed classes</li></ul>
Checking Billing Information	<ul style="list-style-type: none"><li>I. Navigate to billing section</li><li>II. View current balance</li><li>III. Check payment history</li><li>IV. Find payment deadlines</li><li>V. Locate payment methods</li><li>VI. Access fee breakdown</li></ul>
Checking Calendar	<ul style="list-style-type: none"><li>I. Access academic calendar</li><li>II. View class schedule</li><li>III. View enrolment dates</li><li>IV. Checking Calendar</li></ul>
Enrolling Courses	<ul style="list-style-type: none"><li>I. Navigate to course enrolment section</li><li>II. View available courses</li><li>III. Check prerequisites</li><li>IV. Select desired course</li></ul>
Checking Academic Records	<ul style="list-style-type: none"><li>I. Access academic transcript</li><li>II. View past semester grades</li><li>III. View cumulative GPA and credit hours</li></ul>

## Parent Tasks

Task	Actions to Observe
Checking Attendance	<ul style="list-style-type: none"><li>I. Navigate to attendance section</li><li>II. View attendance by course</li><li>III. View total attendance</li><li>IV. Check attendance percentage</li><li>V. Identify any missed classes</li></ul>
Checking Billing Information	<ul style="list-style-type: none"><li>I. Navigate to billing section</li><li>II. View current balance</li><li>III. Check payment history</li><li>IV. Find payment deadlines</li><li>V. Locate payment methods</li><li>VI. Access fee breakdown</li></ul>
Checking Academic Records	<ul style="list-style-type: none"><li>I. Access academic transcript</li><li>II. View past semester grades</li><li>III. View cumulative GPA and credit hours</li></ul>

## 3.2 Observation: Execution Plan

### Pre-observation Setup

#### 1. Environment Preparation

- I. Quiet room with minimal distractions
- II. Computer device with access to current systems
- III. Note-taking materials

#### 2. Documentation Tools: Observation checklist and time-tracking sheet

### General Success Criteria for Tasks:

- I. Pages are found quickly, and navigation is efficient
- II. Information is understood accurately, and data is displayed correctly
- III. Must-be features are supported and easily accessible
- IV. Time taken for each task should not exceed 5 minutes
- V. The user must not get frustrated at any point due to the system

### **3.3 Observation: Follow-Up Plan**

Data analysis will be conducted with a pain point system assigned to each task. Pain points will be drafted by the observer during observation according to how critical the issue identified is.

The critical issues and their equivalent points are as follows:

#### **3.3.1 Navigation issues**

Description: Issues related to finding information, moving between pages, and understanding system structure.

Examples:

- I. Multiple clicks to reach destination
- II. Confusing menu hierarchies
- III. Unclear navigation paths
- IV. Lost within system
- V. Back button issues
- VI. Inconsistent navigation patterns

Impact Level:

- I. Minor (1 point): Slight confusion, quick recovery
- II. Moderate (2 points): Notable delay, some frustration
- III. Severe (3 points): Unable to complete task, significant frustration

### **3.3.2 Accuracy & Information Display**

Description: Issues related to data presentation, accuracy, and clarity of information.

Examples:

- I. Incorrect data display
- II. Missing information
- III. Confusing layouts
- IV. Information overload
- V. Poor data organization
- VI. Unclear labels or instructions

Impact Level:

- I. Minor (1 point): Information present but unclear
- II. Severe (2 points): Missing or incorrect information

### **3.3.3 System Performance**

Description: Issues related to technical performance and system reliability.

Examples:

- I. Slow loading times
- II. System crashes
- III. Error messages
- IV. Session timeouts
- V. Data loss
- VI. Connection issues

Impact Level:

- I. Minor (1 point): Brief delay, minimal impact
- II. Moderate (2 points): Noticeable delay, some impact
- III. Major (3 points): Significant delay, task interruption



### 3.3.4 Pain Point Recording Template

Issue Type	Description	Impact Level	Points
Navigation			
Display			
Performance			

Total Pain Points: \_\_/9

This information was elicited by asking the stakeholders before they were observed how frustrated they would be if they were to encounter a specific problem.

The observers will be given a table to fill out:

Category	Recommendation
User Interface	
Navigation	
Performance	
Functionality	

This table will aid in the classification of requirements elicited using the Kano Model.

### 3.4 Observation: Expected Outcomes

The primary objective of this observation is to gather empirical data that supports the accurate elicitation of user requirements for the proposed University Portal. By observing real-world interactions with the existing system (or current user practices), the team aims to uncover implicit needs, usability barriers, and functional gaps that may not be articulated through interviews alone.

#### **Expected Outcomes:**

1. **Refined Functional Requirements:** Observation will reveal which system features users actively rely on, which are underused, and which are missing. Real tasks such as checking attendance or billing will inform precise functional requirements (e.g., “The system shall allow students to view attendance percentage per course”).
2. **Identification of Implicit User Needs:** Non-verbal user behaviour (e.g., hesitation, repetition, confusion) will help detect unspoken needs or frustrations. These insights support the inclusion of usability-related requirements not captured in interviews.
3. **Clarification of Workflow-Based Requirements:** Observation allows the team to document actual user workflows, ensuring the system supports real usage patterns rather than assumptions. Helps prevent gaps between system capabilities and user expectations.
4. **Input for Non-Functional Requirements:** System speed, ease of navigation, and responsiveness will be evaluated, leading to non-functional requirements such as performance, usability, and availability. For example: “The system shall load key pages (attendance, billing) within 3 seconds.”
5. **Prioritization of Issues:** Pain points recorded during observation will be quantified and categorized to help prioritize requirements based on user impact. This data will support requirement triaging during the SRS development.
6. **Validation of Previously Elicited Requirements:** Observation acts as a cross-check against data from interviews and brainstorming, confirming the relevance and completeness of identified requirements.

## **Expected Functional Requirements:**

### **Dissatisfier:**

#### **1. View Attendance**

- I. The system shall allow students to view their attendance by course and total percentage.
- II. The system shall highlight courses where attendance is below a set threshold (e.g., 80%).

#### **2. View Billing Information**

- I. The system shall display the current account balance and payment history.
- II. The system shall notify users of upcoming payment deadlines and overdue payments.

#### **3. Academic Calendar Access**

The system shall provide access to the academic calendar, including enrolment periods and class schedules.

#### **4. Course Enrolment**

The system shall allow students to view available courses, including prerequisites, and register for them.

#### **5. Academic Records**

The system shall provide access to past grades, GPA, and transcripts.

## **Expected Non-Functional Requirements:**

### **Dissatisfier:**

#### **1. Usability**

- I. The system shall ensure that students and parents can complete common tasks (e.g., checking fees or attendance) within 3–5 clicks.
- II. Navigation menus should be intuitive, with clear labels.

#### **2. Accessibility**

The system shall comply with accessibility standards (e.g., WCAG) to ensure usability by users with disabilities.

#### **3. Security**

- I. Sensitive student information shall be viewable only by authorized users (e.g., with role-based access).
- II. The system shall require authentication for any action involving personal or financial data.

**Satisfier:**

**1. Performance**

- I. The system shall return attendance, billing, or calendar data within 3 seconds.
- II. System response time shall remain under 5 seconds even under moderate server load.

**2. Reliability**

- I. The system shall maintain session stability for at least 30 minutes of user inactivity before timeout.
- II. All transactions (e.g., course enrolment) shall be logged and confirmed.

## **4 Technique: Questionnaire**

### **4.1 Questionnaire: Preparation**

#### **Goals**

1. Identify user expectations for communication and service access
2. Discover pain points with the current Campus Management System
3. Gather suggestions for portal features and UI preferences
4. To categorize potential portal features based on how users perceive them:
  - I. What delights users (Delighters)
  - II. What users expect and value most (Satisfiers)
  - III. What causes dissatisfaction if missing (Dissatisfiers)

#### **Target Stakeholders**

- I. Students
- II. Parents
- III. Lecturers
- IV. Administrators

Each group will receive a tailored questionnaire to match their role and usage context as each group may perceive the same feature differently.

#### **Question Design**

Mix of question types:

- I. Closed-ended (Likert scale, Options and Ratings) for quantifiable data
- II. Open-ended to capture insights and suggestions

#### **Format and Distribution Tools**

To ensure effective and accessible data collection, different formats and distribution methods were used based on the target audience. For parents and students, Microsoft Forms was utilized as the primary tool. This digital format allowed for convenient, remote participation and streamlined data collection.

For lecturers and students who were available on campus, printed questionnaires were distributed and collected during face-to-face sessions. This approach enabled immediate clarifications if needed and ensured higher response rates from participants who may not frequently check digital platforms.

These methods were chosen to maximize engagement, accommodate different accessibility preferences, and ensure the reliability and diversity of responses collected.

#### 4.1.1 Student Questionnaire

##### Part A: Current Experience

1. How do you currently receive academic or administrative updates from the university?

*(Open-ended)*

2. On a scale of 1–5, how satisfied are you with the current university communication system?

*(1 = Very Unsatisfied, 5 = Very Satisfied)*

3. What is the biggest challenge you face when trying to stay updated with university information?

*(Open-ended)*

##### Part B: Features and Preferences

4. Which services would you like to access through a single university portal?

*(Select all that apply)*

- ☐ Grades
- ☐ Class schedules
- ☐ Attendance
- ☐ Announcements
- ☐ Billing
- ☐ Exam timetables
- ☐ Course registration
- ☐ Other: \_\_\_\_\_

5. Would you prefer receiving SMS notifications for urgent matters (e.g., class cancellation, payment deadlines)?

☐ Yes

☐ No

Please explain why or why not:

*(Open-ended)*

6. What is your preferred notification channel for each type of communication?

*(Open-ended)*

7. How important is having a customizable session timeout feature (e.g., auto-logout timer you can control)?

*(1 = Very Unsatisfied, 5 = Very Satisfied)*

8. How important is having a customizable interface (e.g., light/dark mode)?

*(1 = Very Unsatisfied, 5 = Very Satisfied)*

9. How important is calendar integration (e.g., syncing events with Google Calendar or Apple Calendar)?

*(1 = Very Unsatisfied, 5 = Very Satisfied)*

10. How important is a “quiet hour” feature (e.g., no non-urgent notifications during certain hours like late night or early morning)?

*(1 = Very Unsatisfied, 5 = Very Satisfied)*

11. How important is multilingual support (e.g., being able to choose between English and other languages in the portal)?

*(1 = Very Unsatisfied, 5 = Very Satisfied)*

### **Part C: Future Expectations**

1. What is one feature you believe is absolutely necessary for this new communication platform to succeed?

*(Open-ended)*

2. Do you have any other suggestions or concerns about how communication or services could be improved?

*(Optional and open-ended)*

#### 4.1.2 Parent Questionnaire

##### Part A: Awareness and Communication

1. Are you regularly informed about your child's academic performance or attendance?

☐ Yes  
☐ No  
☐ Sometimes

2. How do you usually receive academic updates from the university?  
(Select all that apply)

☐ Email  
☐ SMS  
☐ Phone Call  
☐ My child tells me  
☐ I don't usually receive updates  
☐ Other: \_\_\_\_\_

3. What types of alerts would you find most helpful to receive?  
(Select all that apply)

☐ Low Attendance  
☐ Grade drops  
☐ Payment/fee reminders  
☐ Academic milestones (e.g., semester end, results published)  
☐ Disciplinary actions or warnings  
☐ General announcements  
☐ Other: \_\_\_\_\_

##### Part B: Feature Importance

4. For the following questions, rate the importance if these features from 1 to 5  
(1 = Not important, 5 = Very important)

Receiving urgent SMS alerts (e.g., fee due, missed classes): ☐  
Having access to a parent portal for tracking attendance, grades, billing: ☐  
Multilingual support for better understanding of messages: ☐  
Ability to schedule one-on-one meetings with university staff: ☐

##### Part C: Feedback

5. What is the biggest concern you have when it comes to staying informed about your child's university progress?

(Open-ended)

6. Do you have any additional suggestions for improving parent–university communication?

(Open-ended)



### 4.1.3 Lecturer Questionnaire

#### Part A: Communication Challenges

1. What challenges do you face in sharing academic or administrative updates with students or parents?

*(Open-ended)*

2. How effective do you feel the current communication methods are?

*(1 = Very Ineffective, 5 = Very Effective)*

3. Do you have visibility into whether students or parents have read the messages you send?

☐ Yes

☐ No

4. Which channels do you primarily use for communication with students or parents? (Select all that apply)

☐ University Portal (Clic, EBwise)

☐ Email

☐ Microsoft Teams/WhatsApp/Telegram/Other Messaging Apps

5. What type of messages do you wish could be automatically sent to students or parents?

*(Open ended)*

#### Part B: System Usage and Performance

6. How would you prefer to input or manage academic data (e.g., attendance, grades)? (Select all that apply)

☐ Web interface/Portal

☐ Upload from Excel/CSV

☐ Other: \_\_\_\_\_

7. How important is real-time syncing of your updates with the student portal?

*(1 = Not Important, 5 = Very Important)*

8. Which types of data do you interact with most frequently? (Select all that apply)

*(Select all that apply)*

☐ Student attendance

☐ Grade submissions

☐ Assignment tracking

- ☐ Course announcements
- ☐ Other: \_\_\_\_\_

9. What level of access control would you need in the system?

*(Select all that apply)*

- ☐ Full access to data for my assigned courses/students
- ☐ Ability to send messages/alerts to specific groups
- ☐ View-only access to certain records
- ☐ Admin-only features (for admin staff)

10. How satisfied are you with the performance and reliability of the current systems you use?

*(1 = Very Dissatisfied, 5 = Very Satisfied)*

11. If the new portal allows students/parents to submit queries or requests, how would you prefer to manage and respond to these?

*(Select all that apply)*

- ☐ Built-in ticketing system,
- ☐ Email notifications,
- ☐ Dashboard view of pending queries
- ☐ Other: \_\_\_\_\_

### **Part C: Feedback**

12. What features from other systems would you like to see in this new portal?

*(Open-ended)*

13. Do you have any concerns regarding the new system related to: (Select all that apply)

*(Select all that apply)*

- ☐ Data privacy/security
- ☐ Increased workload or complexity
- ☐ Lack of training/support
- ☐ Accuracy of synced data
- ☐ Other: \_\_\_\_\_

#### 4.1.4 Admin Questionnaire

##### Part A: Communication Challenges & Current Practices

1. How do you currently handle system-wide announcements or notifications?

*(Select all that apply)*

- ☐ Mass email
- ☐ SMS broadcast
- ☐ Portal announcements
- ☐ Through department heads
- ☐ Other: \_\_\_\_\_

##### Part B: System Usage, Data Management, and Desired Features

2. How important is the ability to create, manage, and reuse SMS templates for common communications?

*(1 = Not Important, 5 = Very Important)*

3. Rate the importance of the following features

*(1 = Not Important, 5 = Very Important)*

- Scheduling SMS or email notifications: ☐
- Tracking delivery and read status of messages: ☐
- Sending messages to selected user groups: ☐
- Customizing templates per department/event: ☐

4. Which method do you use most often for managing and updating data?

*(Select all that apply)*

- ☐ Manual entry via portal
- ☐ Excel/CSV upload
- ☐ Internal integrated system (e.g. Oracle, etc.)
- ☐ Paper-based submission
- ☐ Other: \_\_\_\_\_

5. How frequently do you encounter delays/errors when retrieving or submitting data through the system?

*(Select all that apply)*

- ☐ Rarely
- ☐ Occasionally
- ☐ Frequently
- ☐ Very Frequently

## **4.2 Questionnaire: Execution Plan**

### **Announce and Distribute**

Questionnaires will be introduced to participants with a clear explanation of their purpose—to gather feedback on system usage, communication effectiveness, and data management practices. For parents and students, links to Microsoft Forms will be shared via messaging channels. For lecturers and admins present on campus, printed copies will be handed out by personally approaching them, allowing immediate participation. Participants will be informed and assured of their anonymity and the confidentiality of their answers.

### **Monitor Response**

Response rates will be actively monitored throughout the distribution period. For digital forms, Microsoft Forms provides real-time tracking of submissions, helping to identify which groups needed reminders. Periodic follow-ups will be sent to encourage participation and improve response completeness. For face-to-face distributions, physical submissions are immediate, thus participation will be recorded during collection.

### **Ensure Data Quality**

To maintain data integrity, all collected responses—both digital and physical—will be reviewed for completeness and clarity. Incomplete or contradictory answers will be flagged for exclusion or clarification. For digital entries, built-in form validations (e.g., required fields, multiple-choice restrictions) helps reduce input errors. Physical forms will be checked manually during data entry to ensure accuracy and consistency before analysis.

## 4.3 Questionnaire: Follow-Up Plan

### Analyze the Data

After collecting responses, all data—digital and physical—will be consolidated and cleaned for analysis. Each feature will be evaluated based on user feedback and categorized using the Kano Model, for prioritizing product features based on user satisfaction.

The Kano Model classifies features into three key categories based on how users perceive them:

- I. **Delighters** (Excitement Needs): Features that users do not expect but are pleasantly surprised by. These are considered *differentiators*—optional but high-impact elements that can increase user satisfaction significantly.
- II. **Satisfiers** (Performance Needs): Features users expect and that directly correlate with satisfaction—the more of it, the better. These are treated as *core development priorities*.
- III. **Dissatisfiers** (Basic Needs): Fundamental features expected by default. Their absence causes frustration or rejection of the system. These are *must-haves* and non-negotiable for system acceptance.

For each feature, responses will be tallied to determine which category it best fit based on majority sentiment.

### Share Insights with Stakeholders

Findings from the analysis will be summarized and shared with key stakeholders, including academic and administrative leadership, development teams, and project coordinators. Data visualizations—such as Kano graphs, bar charts, and heat maps—were used to communicate:

- I. Which features must be included to avoid user dissatisfaction.
- II. Which features should be optimized to improve satisfaction.
- III. Which features could serve as innovative add-ons to exceed expectations.

Stakeholder presentations facilitated feedback loops and strategic planning discussions, ensuring alignment between user needs and project goals.

### Use Insights to Define Requirements

The final step involves translating user feedback and Kano classifications into actionable system requirements. Features marked as dissatisfiers were included as mandatory functional requirements. **Satisfy** features were prioritized for early development cycles, while **Delight** features were earmarked for enhancement phases or optional modules.

This structured, user-centered approach ensured that system requirements were evidence-based, strategically prioritized, and aligned with the real needs and expectations of all user groups.

## 4.4 Questionnaire: Expected Outcomes

### Response Rate & Participation

Target response numbers:

- I. Students: 25 responses
- II. Parents: 10 responses
- III. Lecturers: 5 responses
- IV. Admin: 5 responses

### Data Collection Expectations

It is expected that there will be preference patterns due to the kano-style question style adopted. This makes classification more accurate and backed up by data. Furthermore, it is expected that requirements elicited by brainstorming are more likely to rank higher since the stakeholder interests is the same. This would prove the efficacy of the potential requirements and aid confirmation of requirements validation.

### Stakeholder-Specific Potential Expectations

The questionnaire is expected to provide additional insight on various areas of specification.

#### Students and Parent

Focus Area	Expected Insight
Navigation	Simplification needs
Communication	Email & SMS
Features	Mobile accessibility
Integration	Calendar

#### Lecturers

Focus Area	Expected Insight
Notifications	Alert preferences
Communication	Broadcast tools
Workflow	Integration with other tools

#### Admins

Focus Area	Expected Insight
Data Processing	Batch operations
Communication	Template systems

**Satisfier:**

1. Custom session timeout (auto-logout timer)
2. Calendar integration (sync events with Google/Apple Calendar)
3. Multilingual support
4. Receiving urgent SMS alerts
5. Access to a parent portal for tracking attendance and grades
6. Creating/managing/reusing SMS templates

**Delighter:**

1. Customizable interface
2. Quiet hour feature
3. Ability to schedule one-on-one meetings with staff