July 30, 2025

HCI PROJECT REPORT

1. Introduction

- Selected System

  The system under evaluation is **Academia**, the official academic services portal of King Khalid University (KKU). Accessible at https://registration.kku.edu.sa, Academia serves as the primary digital gateway for students and faculty to access critical academic functions, including course registration, schedule planning, grade reports, and institutional support services.

- Justification for Selection

  We selected Academia due to its **recent redesign** and its **critical role** in daily academic operations at KKU. Despite its intent to centralize services, the portal exhibits significant usability challenges that directly impact its effectiveness:

  - It impacts **thousands of users daily** (students/faculty), amplifying real-world usability consequences.
  - Its **recent update** highlights unresolved design flaws despite technological enhancements.
  - The complexity of academic workflows demands **intuitive navigation** — currently compromised by structural deficiencies.

2. Evaluation Methodology

To objectively assess Academia's usability issues, we employed a **mixed-methods approach** centered around an online survey targeting King Khalid University (KKU) students. This methodology prioritized *breadth* of feedback while capturing quantifiable metrics aligned with HCI heuristics.

Data Collection Process

1. **Tool**:
    - **Microsoft Forms**: An Arabic-language questionnaire (Survey Link) designed for accessibility.
    - **Rationale**: Arabic is the primary language of KKU students, minimizing comprehension barriers.
2. **Survey Structure**:
    - **8 targeted questions** mapped to HCI-dependent variables:

#	SURVEY QUESTION (TRANSLATED)	HCI METRIC ASSESSED	MEASUREMENT SCALE
1	Time to understand the new interface?	**Time to learn**	Ordinal (5-min intervals)
2	Task speed difference post-update?	**Speed of performance**	Ordinal (Faster/Same/Slower)
3	Ease of accessing routine services (0–10)?	**User satisfaction + Navigation efficiency**	Interval (0–10 Likert scale)
4	Technical errors encountered?	**Error rate**	Binary (Yes/No)
5	Memory of pre-update feature locations?	**Retention over time**	Ordinal (Easy/Need time/Forget)
6	Change in site visit frequency?	**Usage patterns**	Ordinal (Increase/No change/Decrease)
7	Requests for help post-update?	**Reliance on assistance**	Frequency scale (Never/Once/Multiple)
8	Open-ended suggestions	**Subjective pain points**	Qualitative analysis

3. **Participant Recruitment**:
    - Distributed via KKU student groups on **Telegram and WhatsApp** (primary communication channels).
    - Target audience: **Active users of Academia** (post-update).
    - **Sample Size**: 21 respondents (collected over 12 hours).

4. **Question Design Rationale**:
    - **Closed-ended questions (#1–7)**: Generated quantitative data for statistical analysis.
    - **Open-ended question (#8)**: Captured qualitative insights on unmet user needs.

Ethical Considerations

- **Anonymity**: No personal identifiers collected.
- **Voluntary Participation**: Clear disclaimer about optional involvement.

Limitations

- **Self-reported data**: Potential bias in task-time/error recall.
- **Convenience sampling**: Over-representation of tech-savvy students via social media.

3. DATA ANALYSIS:

The survey on the Academia website update reveals significant user experience issues, analyzed through quantitative data (task time, error rate) and qualitative feedback. The aim is to pinpoint key usability problems and suggest improvements based on Human-Computer Interaction (HCI) principles.

Quantitative Data Analysis:

- **Time to Understand New Interface:** A majority of users (47.6%) needed "more than 15 minutes" to understand the new interface, with another 28.6% requiring "5-15 minutes". Only a small fraction (23.8%) found it intuitive ("less than 5 minutes"). This indicates a substantial learning curve and lack of immediate discoverability.
- **Task Completion Speed After Update:** A concerning 38.1% of users reported "slower" task completion, and another 38.1% experienced "no change" in speed. Only 23.8% found it "faster". This suggests the update did not improve, and in many cases, hindered efficiency.
- **Ease of Access to Usual Services:** Responses varied widely (0-10 scale). Several users reported low scores (0, 1, 2, 3), indicating significant difficulty. Conversely, some gave high scores (8, 9, 10). This inconsistency points to varied perceptions and potentially unclear service organization.
- **Technical Errors Encountered:** A low error rate was observed, with only 14.3% of users encountering technical errors. The majority (85.7%) reported "no" errors. This indicates good technical stability, with usability issues stemming from design rather than bugs.
- **Recall of Previous Function Locations:** A high percentage of users struggled with recall: 38.1% "often forget and search" for functions , and 33.3% "need time to remember". Only 28.6% found recall "easy". This suggests a violation of Recognition rather than Recall, contributing to slower user interaction.

- **Change in Site Usage Frequency:** Most users (61.9%) reported "no change" in site usage. However, a notable 28.6% stated their usage "decreased" , while only 9.5% reported an "increase". This indicates the update did not enhance engagement and led to decreased usage for some.
- **Assistance Sought After Update:** A high proportion of users needed help: 42.9% "more than once" , and 33.3% "once". Only 23.8% sought "no" assistance. This frequent need for help signifies poor interface intuitiveness.

Qualitative Feedback and Key Usability Issues:

The quantitative data supports the identified critical usability issues:

- **Lack of Visual Hierarchy and Cluttered Layout:** The long "time to understand" and difficulty recalling function locations align with a cluttered interface, making information processing and navigation challenging.
- **Inconsistent and Unclear Navigation/Menu Structure:** "Slower" task completion and difficulty accessing services are direct consequences of ambiguous or redundant navigation paths, leading to user confusion and inefficiency.
- **Poor Readability and Visual Design (Lack of Contrast/Color Usage):** While not directly measured, general user frustration and difficulty in understanding the interface can be exacerbated by poor visual differentiation and low contrast, increasing cognitive load.
- **Redundant and Ambiguous Information Presentation:** Duplicated information and unclear icons contribute to extended "time to understand" and difficulties in "recall," forcing users to decipher the interface and adding unnecessary cognitive burden.
- **Inconsistent Iconography and Lack of Labels:** This issue directly impacts "recall of previous function locations" and overall learnability. Unintuitive icons without clear labels force users to guess, violating the Recognition rather than Recall principle and increasing the need for assistance.

4. Prototype Design

To address usability issues, we developed a **high-fidelity interactive prototype** focused on improving user experience through enhanced visual hierarchy, consistent navigation, clear information, and intuitive iconography.

Key design solutions include:

- **Enhanced Visual Hierarchy & Layout:** More whitespace and clear visual separation reduce clutter. Key information is logically grouped. The distinct navigation bar guides users, and redesigned action cards at the bottom have increased spacing and consistent sizing for easier scanning. This directly tackles the "Cluttered Layout" issue.
- **Streamlined Menu Structure:** Redundant navigation elements are gone. The five key service areas are now exclusively clear cards with icons and text, resolving "Inconsistent Navigation" by providing a predictable user path.
- **Improved Readability & Visual Design:** A refined color palette ensures better text-background contrast. Green is used strategically for highlights. Background shades and borders differentiate sections, making the interface less overwhelming and more engaging, while also improving accessibility.
- **Eliminated Redundant/Ambiguous Information:** Navigation duplication is resolved, with the five main service cards as primary access points. Icons in the user information section are universally recognizable or clearly labeled.
- **Consistent Iconography & Labeling:** All icons are consistent and paired with clear text labels, particularly in action cards and user information. This supports "Recognition rather than Recall."

Experience the prototype at: https://moayadalshehry.github.io/Project/

5. Conclusions & Recommendations

Analysis of the Academia website update revealed significant usability challenges, despite stable technical performance. Users faced a substantial learning curve, slower task completion, and frequent need for external help, struggling to recall function locations and access services. This has led to a concerning decrease in site usage.

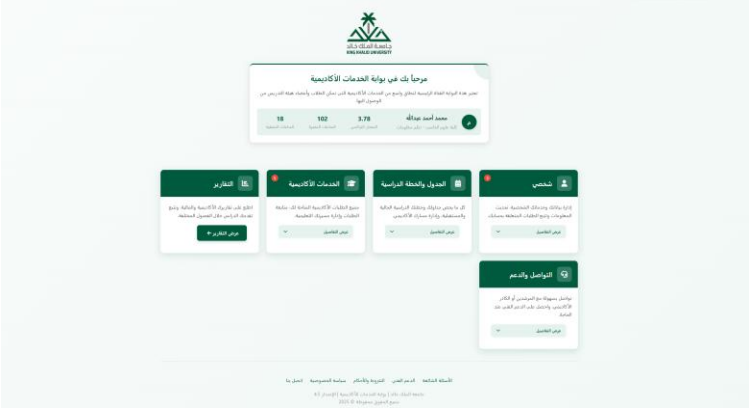
These issues stem from fundamental design flaws: poor visual hierarchy, cluttered layout, inconsistent/redundant navigation, ambiguous information, and unclear iconography. These violate HCI principles like Visibility, Consistency, Discoverability, Recognition over Recall, and Aesthetic & Minimalist Design.

Suggestions for Improving User Experience:

- **Refine Visual Hierarchy & Layout:** Implement a clean design with ample whitespace and clear visual cues to reduce cognitive load.
- **Standardize & Streamline Navigation:** Establish a single, consistent, intuitive navigation structure. Eliminate redundancy and ensure clear, concise labels.
- **Improve Readability & Aesthetic Design:** Use a well-considered color palette for sufficient contrast, strategically highlighting important information.
- **Ensure Clear & Unambiguous Information:** Avoid content duplication. All icons must be universally understood or accompanied by clear text labels.
- **Prioritize Recognition Over Recall:** Design the interface so functions are easily recognizable, reducing cognitive effort.
- **Conduct Usability Testing:** Rigorously test proposed design changes with target users before full deployment.
- **Provide Comprehensive User Support:** Ensure readily accessible help resources for complex tasks, even with a self-explanatory interface.

6. Appendices

- **Prototype Screenshots:** Two representative screenshots illustrating the redesigned interface are included below.



- **Raw Survey Data:** Complete raw user survey data, the basis for quantitative analysis, is available via Google Sheets: https://docs.google.com/spreadsheets/d/1BLEjUmTD0UE-BGysF5FLk2h8ujzNuSEo/edit?usp=sharing&ouid=108630568911225303223&rtpof=true&sd=true
- **Interactive Prototype Link:** Experience the full interactive prototype demonstrating proposed design solutions: https://moayadalshehry.github.io/Project/
- **Evaluation Tool:** The Microsoft Forms questionnaire used for data collection can be reviewed here: https://forms.cloud.microsoft/r/6ZyxBz9UYg

TEAM MEMBER	INTRODUCTION	EVALUATION METHODOLOGY	DATA ANALYSIS	PROTOTYPE DESIGN	CONCLUSIONS & RECOMMENDATIONS	APPENDICES
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