

SCHOOL OF NATURAL APPLIED SCIENCE



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SCHOOL OF NATURAL APPLIED SCIENCE

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Bursary Home: Streamlining Bursary Applications in South Africa



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1	Cover and Contents Pages				
	Title	1			
	Cover Page	2			
	Table of Contents	2			
2	Introduction				
	Business ICT assessment (Introduce the business and ICT usage if any)	5			
3	Identification of ICT problems				
	Interview of owner/employee (Discuss the contents of the interviews and outline problems picked up from the interview)	20			
	Daily transactions Discuss in detail the businesses daily transactions and outline problems picked up from monitoring them)	20			
	System/software requirements analysis (Discuss the need of a system/software)	25			
	solution analysis (Propose possible solutions to the problem)	10			
4	Conclusion				
	Conclusion Conclude by briefly discussing the problem and your proposed solution	5			
5	Overall Document Presentation				
	Document layout, fonts, paragraph and bullets alignments etc	5			
6	Interviews				
	Group member interview about the project	5		N/A	N/A
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Bursary Home: Streamlining Bursary Applications in South Africa

1. INTRODUCTION

1.1. Business ICT Assessment

The bursary application landscape in South Africa is often fragmented and inefficient, presenting significant challenges for students seeking financial aid, universities trying to connect students with funding, and in tracking the success of bursary students, and bursary providers. Existing systems are often limited to static bursary listings, lacking essential features for structured application processes, progress tracking, and personalized user experiences for both students and bursary providers. Universities also face challenges in managing bursary information, verifying student eligibility, and tracking the impact of bursary programs on student success. Bursary Home aims to address these shortcomings by providing a centralized platform that streamlines the entire bursary application process for all stakeholders.

1.2. Current ICT Usage:

- A significant percentage (80%) of bursary providers still rely on email-based bursary applications, leading to potential delays and lost applications (Source: Educoop).
- Many (65%) bursary providers lack automated tracking systems, hindering communication and creating inefficiencies in the application process (Source: Bursary Portal).
- Most existing platforms offer limited personalized interactions, preventing students from effectively tracking their application status or engaging with bursary providers.
- Universities often rely on manual processes for managing bursary information, verifying student eligibility, and tracking student outcomes.

1.3. Proposed ICT Integration:

- A centralized online platform facilitating bursary discovery, application submission, and real-time tracking for students, bursary providers, and universities.
- Secure user authentication, enabling students and university personnel to create profiles and monitor application status.
- A dedicated dashboard for bursary providers to manage applications, communicate efficiently with students, and reduce administrative burdens.
- A dedicated portal for universities to manage bursary listings, access student data (with appropriate permissions), and generate reports.
- Automated notifications to keep students, providers, and universities informed about application status updates and deadlines.
- Integration with university student information systems (SIS) for streamlined data exchange.

- Reporting tools for universities to track bursary usage and student outcomes related to specific bursaries and to provide feedback to bursary providers.

2. IDENTIFICATION OF ICT PROBLEMS

2.1. Interview Findings

To strengthen the validation of Bursary Home, below are interviews conducted with various stakeholders:

2.1.1. Interview with a Student

- **Student Profile:** A recent high school graduate from a low-income family, seeking a bursary to study engineering at a university.
- **Interview:**
 - **Question 1:** "What challenges did you face when searching for bursary opportunities in the past?"
 - **Response 1:** "It was hard to find bursaries that I actually qualified for. I wasted a lot of time applying for things that weren't relevant."
 - **Question 2:** "How did you typically find out about bursaries, and what were the limitations of those methods?"
 - **Response 2:** "I mostly relied on my teachers or the internet, but the information was often outdated or incomplete."
 - **Question 3:** "What features would you find most helpful in a platform like Bursary Home?"
 - **Response 3:** "I'd love to have a platform that could match me with bursaries based on my grades and interests."
 - **Question 4:** "How important is it for you to receive timely updates on your application status?"
 - **Response 4:** "It's really stressful not knowing what's happening with my application. Having to contact bursary providers and not getting any update, not knowing if as one I should consider other bursaries, I'd appreciate regular updates. "

2.1.2. Interview with a Bursary Provider

- **Provider Profile:** A corporate social responsibility manager at a large company that offers bursaries to students in specific fields.
- **Interview:**
 - **Question 1:** "What are the biggest challenges you face in managing the bursary application process?"

- **Response 1:** "We receive hundreds of applications every year, and it's difficult to sort through them all and find the best candidates."
- **Question 2:** "How do you currently handle application submissions, reviews, and communication with applicants?"
- **Response 2:** "We rely on email and spreadsheets, which are time-consuming and prone to errors."
- **Question 3:** "What features would make it easier for you to manage applications and select qualified candidates?"
- **Response 3:** "A platform that could automatically filter applications based on our criteria would be incredibly helpful."
- **Question 4:** "How important is it for you to track the performance of your bursary program?"
- **Response 4:** "We need to track the academic performance of our bursary recipients to ensure our program is effective."
- **Question 5:** "Would you be interested in a platform that could help you reach a wider pool of qualified applicants?"
- **Response 5:** "We're always looking for ways to reach more students, especially those from disadvantaged backgrounds."

2.1.3. Interview with a University Financial Aid Officer

- **Officer Profile:** A financial aid officer at a South African university, responsible for assisting students with bursary applications.
- **Interview:**
 - **Question 1:** "What are the most common challenges students face when applying for bursaries at your university?"
 - **Response 1:** "Many students don't know where to start when looking for bursaries."
 - **Question 2:** "How do you assist students in finding and applying for bursaries?"
 - **Response 2:** "We provide guidance and resources, but it can be overwhelming for students to navigate all the options."
 - **Question 3:** "What resources do you currently use to help students with their bursary applications?"
 - **Response 3:** "We use a combination of online databases and printed materials."
 - **Question 4:** "How do you think a platform like Bursary Home could benefit your students?"

- **Response 4:** "A platform like Bursary Home could help students find and apply for bursaries more efficiently."
- **Question 5:** "What are the most important features you would look for on such a platform?"
- **Response 5:** "A platform that integrates with our university's student information system would be very valuable."
- **Question 6:** "What are the biggest challenges your university faces in managing and disseminating bursary information to students?"
- **Response 6:** "Keeping the information up-to-date and ensuring that students are aware of all available opportunities is a constant struggle. We also spend a lot of time answering the same questions repeatedly."
- **Question 7:** "How do you currently verify the ongoing eligibility of students for bursaries after they are awarded (e.g., enrollment status, academic performance)?"
- **Response 7:** "It's a manual process. We have to contact departments and check records, which are time-consuming and prone to errors."
- **Question 8:** "What kind of reporting would be most valuable to your university regarding bursary usage and student outcomes? (e.g., graduation rates, employment rates after graduation)."
- **Response 8:** "We need data on how different bursaries impact student success – do students with certain bursaries have higher graduation rates? What are their career paths after graduation? This information would help us advise students better and attract more bursary providers."
- **Question 9:** "From a technical perspective, what are the key considerations for integrating Bursary Home with your university's IT systems (e.g., student information system, authentication protocols, data security policies)?"
- **Response 9:** "Data security is paramount. We need to ensure that any integration complies with our university's data privacy policies and that student data is always protected. We also need to consider the compatibility of Bursary Home with our existing systems and the ease of integration."

2.2. Business Daily Transactions

The current bursary application process is manual, fragmented efforts from students, providers, and universities, leading to inefficiencies, lack of transparency, and limited access for disadvantaged students.

2.2.1. Current Process:

- Students manually search for bursary opportunities on multiple websites and forums.

- Applications are submitted via email or paper-based forms, resulting in a lack of tracking and follow-up capabilities.
- Bursary providers manually review applications, which can be overwhelming and inefficient.
- Lack of knowledge amongst students from underprivileged backgrounds.
- Universities often act as intermediaries, receiving bursary information and disseminating it to students, leading to potential delays and information gaps.
- Universities struggle to track which bursaries are most effective in supporting student success.
- The process of verifying student eligibility for bursaries can be cumbersome and time-consuming for universities.

2.2.2. Challenges Identified:

- Manual application processes lead to data loss, errors, and delays (Source: South African Revenue Service).
- Students report a lack of timely updates on their application status, causing anxiety and frustration (Source: SA Bursaries).
- Bursary providers are overwhelmed by the volume of email applications, leading to poor communication and long response times (Source: News24).
- The cost of tertiary education has been on the rise, leading to students dropping out.
- Universities are struggling to efficiently inform students of opportunities for funding.

2.3. System/Software Requirements Analysis

2.3.1. Functional Requirements

- **User Authentication:**
 - **Description:** Secure user login and registration for students, bursary providers, and university personnel.
 - **Importance:** Ensures authorized access and data security.
 - **Examples:** Email/password registration (with password strength requirements: minimum 8 characters, including uppercase, lowercase, number, and symbol), OTP, two-factor authentication, social login (Google, Facebook).
- **Bursary Search:**
 - **Description:** Functionality to search for bursaries based on criteria like location, course of study, eligibility requirements, and deadlines.
 - **Importance:** Helps students efficiently find relevant bursaries.

- **Examples:** Filtering options by field of study, location, specific requirements, bursary value, closing date. Sorting options by relevance, closing date, bursary amount. Includes fuzzy search to handle typos.
- **Application Submission:**
 - **Description:** Allows students to submit applications directly through the platform, including document uploads and personal statements.
 - **Importance:** Streamlines the application process and eliminates paperwork.
 - **Examples:** Online application forms, document upload capabilities (PDF, DOCX, JPG files up to 5MB), progress tracking. Rich text editor for personal statements with a character limit of 1000 characters.
- **Tracking System:**
 - **Description:** Enables students to monitor the status of their applications (e.g., pending, under review, successful, rejected).
 - **Importance:** Provides real-time updates and reduces uncertainty.
 - **Examples:** Application status indicators (Received, Under Review, Shortlisted, Interviewing, Successful, Rejected), email notifications sent immediately upon status change, progress dashboards.
- **Provider Dashboard:**
 - **Description:** A dedicated dashboard for bursary providers to manage applications, communicate with students, and generate reports.
 - **Importance:** Facilitates efficient application review and management.
 - **Examples:** Application filtering by defined criteria, bulk communication tools (email, SMS), reporting features (application statistics, demographics, success rates, export to CSV/Excel). Ability to define custom application criteria.
- **University Portal:**
 - **Description:** Dedicated interface for university staff to manage bursary listings, access student data (with appropriate permissions), and generate reports.
 - **Importance:** Streamlines bursary management and supports student success.
 - **Examples:** Ability to add, edit, and remove bursary listings. Access to anonymized student data (e.g., GPA, field of study) for matching with bursary criteria (with appropriate permissions and data privacy safeguards). Reporting features on bursary usage and student outcomes (graduation rates, employment rates). Interface for providing bursary providers feedback on student performance.
- **Integration with SIS:**

- **Description:** Ability to securely exchange data with university student information systems (e.g., student enrollment status, academic records) and to verify student eligibility.
- **Importance:** Streamlines data management and reduces manual effort.
- **Examples:** API integration with common SIS platforms (e.g., Banner, PeopleSoft). Secure data transfer protocols (HTTPS, SFTP). Automated verification of student enrollment status and academic standing.
- **Bursary Promotion Tools:**
 - **Description:** Features to easily promote relevant bursary opportunities to targeted student groups (e.g., based on field of study, academic performance).
 - **Importance:** Enhances student awareness of funding opportunities.
 - **Examples:** Email marketing tools. Integration with university learning management systems (LMS). Targeted notifications based on student profiles.

2.3.2. Non-Functional Requirements

- **System Scalability:**
 - **Description:** The system should be able to handle increasing numbers of users and applications without performance degradation.
 - **Importance:** Ensures the system can accommodate future growth and peak usage periods.
 - **Examples:** Cloud-based infrastructure, scalable database architecture, load balancing. The system must support at least 10,000 concurrent users and handle 5,000 new applications per day without performance degradation.
- **Data Security:**
 - **Description:** Ensure confidentiality, integrity, and availability of user data with encryption and secure protocols.
 - **Importance:** Protects sensitive information and maintains user trust.
 - **Examples:** HTTPS, data encryption (AES-256), regular security audits, access controls (role-based access control), compliance with POPIA. Compliance with university data privacy policies.
- **Performance:**
 - **Description:** Fast response times for all system functions.
 - **Importance:** Enhances user experience and reduces frustration.
 - **Examples:** Page load times under 3 seconds, optimized database queries, caching mechanisms. 90% of page loads should occur in under 2 seconds. Search queries

should return results in under 1 second. Application submission shall be completed within 5 seconds.

- **User-Friendly Interface:**
 - **Description:** Intuitive and easy-to-navigate interface for all users, especially those with limited technical skills.
 - **Importance:** Increases user adoption and satisfaction.
 - **Examples:** Clear layouts, simple navigation, mobile responsiveness, accessibility features (WCAG compliance, screen reader compatibility, keyboard navigation).
- **Availability and Reliability:**
 - **Description:** 24/7 availability with redundancy and failover mechanisms.
 - **Importance:** Ensures continuous operation, especially during critical application periods.
 - **Examples:** Cloud-based hosting with high availability, automatic backups, disaster recovery plan. The system should maintain 99.9% uptime, excluding scheduled maintenance. Daily backups with offsite storage.

2.3.3. Additional Requirements

- **Administration:**
 - **Description:** Secure administrative interface for managing users, roles, system configuration, bursary content, and platform settings.
 - **Importance:** Allows for proper system maintenance and control.
 - **Examples:** User management (add, edit, delete users), Role Management (define and assign roles), system configuration (setting parameters), content management (managing bursary listings, FAQs, etc.).
- **Reporting:**
 - **Description:** The system should generate reports for students, bursary providers, and universities.
 - **Importance:** Helps students track and reflect on applications, helps providers with performance reviews, and helps universities with student success tracking.
 - **Examples:** Application statistics, demographics, success rates, export to CSV/Excel. Reports on bursary usage and student outcomes (graduation rates, employment rates, etc.).
- **Accessibility:**
 - **Description:** Ensure the platform is accessible to users with disabilities.
 - **Importance:** Inclusivity and compliance.

- **Examples:** WCAG 2.1 compliance. Screen reader compatibility, keyboard navigation.

2.4. Solution Analysis

2.4.1. Proposed Solutions:

- **Bursary Home Centralized Platform:** A comprehensive platform for bursary discovery, application, and tracking for students, providers and universities.
- **Automated Tracking System:** Real-time status updates and notifications for students, providers, and universities.
- **Data Management Dashboard:** A secure and structured database for storing and managing applications and student data (with appropriate permissions).
- **Communication Tools:** Integrated messaging and notification system for effective communication between students, providers, and universities (Source: TechCrunch).
- **Student Support System:** Dedicated channels to help students through application process.
- **University Integration Module:** Dedicated module for universities to manage bursary information, verify student eligibility, and track student outcomes.
- **AI-Powered Document Reading & Field Extraction (OCR & NLP):** For Intelligent Document Processing (IDP), Bursary Recommendation Engine and other available integration.

3. CONCLUSION

Bursary Home offers an innovative solution to address the inefficiencies and challenges in the South African bursary application process. By providing a centralized platform with advanced features for students, providers, and universities, Bursary Home aims to improve accessibility, transparency, and efficiency for all stakeholders. The platform's design, grounded in user-friendly interfaces, secure data management, and automated processes, promises to streamline the application process and empower students to access the financial aid they need to pursue their education, while simultaneously providing universities with the tools they need to effectively manage and track their bursary programs.