



## Digital Transformation in Higher Education: A Case Study on the Admission Deanship at Al-Neelain University, Sudan

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### Abstract:

Today's world is witnessing rapid technological transformations that have directly impacted higher education institutions, where digital transformation and the implementation of electronic systems represent one of the fundamental pillars for developing the administrative and academic work environment. This study reviews how digital transformation and electronic systems have influenced the performance of admissions and registration deanships, focusing on Al-Neelain University. The paper discusses the most prominent electronic systems adopted by the university, such as the electronic registration system, the financial system, the learning management system (LMS), the results processing system, the student services portal, and the academic certificate issuance system. The analysis results showed that these systems contributed to enhancing the efficiency of administrative performance, facilitating academic processes, reducing errors and administrative congestion, and ensuring the continuity of service provision even under exceptional circumstances such as the war in Sudan. The study relied on an analysis of statistical data extracted from admissions and registration systems, in addition to a critical review of Al-Neelain University's technical experience. This study reflects the pivotal role of digital transformation in enhancing the quality and sustainability of university services and presents a model that can be replicated in Sudanese and Arab universities.



**Keywords:** Digital transformation, higher education, admission systems, Al-Neelain University, electronic governance.

## Introduction

### Digital transformation

Digital transformation is defined as a process aimed at improving institutions and organizations via significant changes to their characteristics using a range of information, computing, and communications technologies (A.Naeem and Amro, 2024) .It involves converting several types of information into digital formats through computer technologies that utilize binary systems. This process is entrusted to computers, and the information is converted into a set of binary numbers. This is accomplished by relying on a range of specialized technologies and devices (Farhat and Fatima, 2020) .

It also encompasses all forms of information that can be digitalized, whether text, graphics, still images, or moving images. This information is transmitted over the Internet using intermediary electronic devices (computers and telephones). Digital transformation has also opened the possibility of implementing current information networks for communications, through which a vast amount of digital information, which continues to grow, can be stored and distributed (El-Touniand and Sherihan , 2024) .

Digital transformation in universities is a set of integrated processes and procedures aimed at utilizing and integrating modern and smart information technology into all educational processes, from admission and registration to the issuance of certificates.

#### 1. The Importance of Digital Transformation for Universities

Digital transformation offers numerous benefits to universities, including:

- Improving the quality of education: modern technology enables more interactive and engaging learning experiences for students and enhances collaboration and communication between students and faculty.
- Enhancing operational efficiency: technology can help automate many administrative tasks, saving time and money and improving the efficiency of operations within the university.
- Expanding access to education: technology enables students from all over the world to access university education, regardless of their location or circumstances.
- Developing student skills: technology helps students acquire the digital skills necessary for success in the job market.
- Improving university reputation: universities that embrace technology demonstrate that they are modern and advanced, helping them attract the best students and faculty (IBS Training Academy , 2024) .

## 2.The Impact of Digital Transformation on Universities

Digital transformation is leading to radical changes in the way universities operate. The most important of these changes are:

- A transition from the traditional education model to a hybrid education model: this model combines traditional classroom education with online education, allowing students greater learning flexibility.
- The increasing importance of data and analytics: data and analytics are used to improve decision-making in all aspects of the educational process, from curriculum development to student performance assessment.
- The emergence of new job roles: universities require experts specializing in educational technology and data analytics to effectively manage the digital transformation process.
- Changing educational models: Digital transformation is reshaping educational models by increasing the prevalence of self-paced and project-based learning.



- Restructuring of departments: universities will need to restructure their departments to align with the requirements of digital transformation by creating new units specialized in digital technology and developing the skills of staff.
- Promoting a culture of innovation: Digital transformation will contribute to fostering a culture of innovation in universities by encouraging the use of technology to develop new solutions to the challenges they face (IBS Training Academy , 2024) .

### **Al-Neelain University**

Al-Neelain University was established on March 13, 1993, by presidential decree. It is an academic and administrative development of Cairo University, Khartoum Branch, which was established in 1955 with three faculties (Arts, Commerce, and Law). In 1974, the Department of Mathematics was established. In 1991, the Departments of Zoology, Botany, Chemistry, and Physics were added, and finally, the Department of Geology was added. The following is a summary of the university:

- Number of students: 78,789.
- Number of faculty members: 1,118.
- Number of university faculties: 22.
- Number of research centers: 10.
- Number of deanships: 5.
- Number of institutes: 2.
- Number of secretariats: 2.
- Number of scientific journals and publications: 9.
- Number of academic degrees: 6 (Intermediate Diploma, Technical Diploma, bachelor's degree, Higher Diploma, Master's Degree, and Doctorate).
- Number of electronic systems: 7 (Al-Neelain U O W, 2025)

### **Deanship of Admission and Registration at Al-Neelain University**

The Deanship of Admission and Registration is considered one of the university's pivotal deanships, serving as a link between the university and the



community. Through it, a student's university life begins. The deanship's role is not limited to implementing admission and registration processes alone. Students are provided with comprehensive information about the university, its colleges, specializations, and admission requirements, in addition to the necessary regulations and rules that students need throughout their academic career, such as the study system, exams, and others. The deanship also provides data and statistics related to students to the relevant university departments with the aim of developing university services and serving its members and graduates.

The deanship has witnessed, and continues to witness, notable developments in accelerating and improving admission and registration procedures. adopts modern technologies to streamline and accelerate academic and administrative tasks, accomplish tasks, simplify procedures, and transition to an electronic work environment, in accordance with the directives of senior management to implement the concept of digital transformation. It also activates the role of the electronic academic system, which includes the electronic registration system, where the student can complete the entire electronic registration process without the hassle of reaching the university or college, and the role of the Information Technology Center has had the greatest credit in this. The deanship continues to make strenuous efforts to make maximum use of modern technologies to facilitate and develop academic processes in a way that serves the faculty member and student alike, while adhering to the highest standards in providing all its services, in an effort to serve this venerable university and develop its outputs in a way that keeps pace with the aspirations of this generous nation, hoping from God for success and guidance (Al-Neelain U O W, 2025) .

### **Duties of the Deanship of Admission and Registration**

The Deanship oversees admission and registration procedures at all university colleges, centers, and institutes in accordance with the regulations and procedures governing this, in coordination with the General Administration of Admission. It is responsible for:

- a. Designing the university's admission and registration guide, in coordination with the university's colleges, and publishing it annually.
- b. Conducting admission and transfer procedures for students nominated for admission to the university and completing their registration procedures.
- c. Reviewing admission and registration regulations and procedures and related matters for all university colleges.
- d. Proposing tuition fees for students.
- e. Preparing various statistical reports on admission and registration and their studies and making recommendations regarding them.
- f. Supervising the production of final registration lists for review and approval, in coordination with the colleges.
- g. Reviewing, developing, and monitoring the systems used by the Deanship in the admissions system, the registration system, and the bridging and transfer system, in coordination with the Secretariat of Academic Affairs.
- h. Preserving and archiving student documents (Al-Neelain U O W, 2025) .

### **Objectives of the Deanship of Admission and Registration**

The Deanship seeks to achieve the following objectives:

- a. Following the best methods for selecting, accepting, and guiding students to complete their studies in a manner commensurate with their abilities.
- b. Providing academic advice and guidance to students.
- c. Improving admission and registration systems and procedures and updating and developing the necessary resources for this purpose.
- d. Supporting students' academic progress to ensure graduation within the timeframe specified by the study regulations.
- e. Preserving, auditing, and documenting students' financial data.
- f. Strengthening relations and exchanging expertise with deanships, secretariats, and counterpart bodies inside and outside the country (Al-Neelain U O W, 2025) .



## Contribution of Digital Transformation to Developing the Performance of the Deanship of Admission at Al-Neelain University

Al-Neelain University has been keen to adopt digital transformation in its services. It has launched an electronic registration portal for new students, where admission is conducted through the university's official website instead of manual processes. For example, the university announced the start of online registration procedures for new students for the 2019–2020 academic year on its official website, marking the first step in launching the system. This included clear guidelines for data entry, medical examinations, and printing tuition receipts from the system for payment. (Al-Neelain U , 2019)

The university's Information Technology Center also developed an integrated administrative and financial system (ERP) that connects all university units within the "Paperless University" vision. The system was developed internally to include all administrative and financial procedures and improve the efficiency of human and financial resources management, which will benefit the Deanship of Admissions and Registration. (Al-Neelain U, 2025)

Studies indicate that digitizing and automating tasks such as admissions, registration, and fiscal management facilitates processes, reduces paperwork and errors, and increases the efficiency of educational institutions. (Osman, H, 2022)

### Previous Studies

Over the past two decades, universities have witnessed a growing interest in digital transformation and the use of smart systems in their academic and administrative management. The Deanships of Admissions and Registration are among the departments most affected by these transformations, as they

represent the first interface for students' interactions with the university. Numerous studies have addressed this topic from multiple perspectives, some focusing on administrative and organizational aspects, while others have focused on student satisfaction or the sustainability of educational services during crises. Some of these studies include the following:

- Osman (2022): The study examined the opportunities and challenges of digital transformation in Sudanese universities, confirming that the Deanships of Admissions and Registration are among the departments that benefit most from automation, due to its direct impact on improving daily performance. However, the study indicated challenges in infrastructure and a lack of training necessary to operate digital systems efficiently (Osman, A , 2022) .
- Abdelrahman (2021): The study focused on measuring student satisfaction with digital services at Al-Neelain University. The results showed that student satisfaction was directly related to the speed of obtaining results and the ability to follow up on procedures online, which enhanced transparency and reduced administrative congestion. (Abdelrahman, M , 2021)
- UNESCO (2020): Highlighted the role of digital transformation in ensuring the continuity of educational and administrative services in higher education institutions, emphasizing that smart systems contribute to providing flexible and effective alternatives, especially during times of crisis, enhancing quality and sustainability. (UNESCO , 2020)
- Elhag (2020): Researched the impact of electronic accounting information systems on the quality of financial reporting at the University of Al-Neelain. The results showed that integration between the financial system and the admissions system helped improve the accuracy of financial data and accelerate the decision-making process. (Elhag, S, 2020)
- Al-Kaabi (2019): The study reviewed the role of the Deanships of Admissions and Registration in guiding students through electronic systems and confirmed that digital transformation contributes to

simplifying registration and admission procedures and improving academic guidance mechanisms, which has positively impacted the quality of services provided. (Al-Kaabi, H, 2019)

### Discussion of Previous Studies

These studies share an emphasis on the positive role of digital transformation in raising the efficiency of university services and improving the student experience. However, they differ in their focus, as some studies focused on the administrative aspect (Elhag, 2020; Al-Kaabi, 2019), while others focused on student satisfaction (Abdelrahman, 2021), while international studies addressed the strategic dimension and sustainability (UNESCO, 2020).

Table (1) Comparison of Previous Studies

Researcher's Name	Year	Study Topic	Main Results
Osman	2022	Opportunities and Challenges of Digital Transformation in Sudanese Universities.	Deanships of Admissions and Registration are among the departments that have benefited most from automation due to their multiple daily interactions with students.
Abdelrahman	2021	Student Satisfaction with Digital Services in Sudanese Universities – A Field Study at the University of Al-Neelain.	Student satisfaction is linked to the speed of obtaining results and the ability to follow up procedures online, which has enhanced transparency and reduced administrative

			congestion.
UNESCO	2020	Digital Transformation in Higher Education – Enhancing Quality and Sustainability.	Digital transformation ensures the continuity of academic and administrative services during crises through flexible electronic alternatives.
Elhag	2020	The Impact of Electronic Accounting Information Systems on the Quality of Financial Reports – The Case of Al-Neelain University.	Integration between the financial and admission systems has improved the accuracy of financial data and accelerated the decision-making process.
Al-Kaabi	2019	The Role of Admissions and Registration Deanships in Guiding Students Through Electronic Systems.	Digital systems simplify registration procedures, improve student guidance, and enhance the quality of service provided.

### Research Gaps

Despite the wealth of previous studies, most have focused on a specific aspect of digital transformation, whether administrative, financial, or service-related. There is a need for a comprehensive study that links these aspects, focusing on the deanships of admission and registration as the initial point of contact for

students entering the university. This paper focuses on admission deanships in general and on the Deanship of Admission at Al-Neelain University in Sudan as a case study.

## Objectives

1. Analyze the impact of digital transformation on the Deanship of Admission and Registration at Al-Neelain University (speed and accuracy of processes).
2. Identify the challenges faced by the Deanship of Admission and Registration when implementing digital transformation at the university.
3. Propose a set of solutions and recommendations to improve the implementation of digital transformation in university admission deanships, based on the case study at Al-Neelain University.
4. Provide strategic insights: Provide strategic insights for universities and educational institutions on how to effectively implement digital transformation in admission processes.

## Methodology

### 1.Reasons for the Digital Transformation in the Deanship of Admission and Registration

Several factors prompted the University of Al-Neelain to adopt a digital transformation in the Deanship of Admission and Registration, most notably:

- Time factor: The lifecycle of procedures related to admission and registration took a long time due to the complexity of the paper-based documentation cycle. It began with submitting a paper application to the head of the department, then the dean of the college, the college supervisor at the Deanship of Admission, and finally the dean of admission.
- Effort factor: Completing the procedures required significant physical and financial effort, given the university's vast geographical area and the

dispersion of its colleges in distant parts of the capital, Khartoum. Some colleges are more than 40 kilometers from the central administration.

- Speed factor: Accessing, processing, and making decisions was extremely slow due to reliance on paper documents and their storage in scattered locations.
- Accuracy factor: Information was characterized by inaccuracy, especially regarding decisions, exceptions, and exemptions, as they often relied on individual sources that were not indexed or regularly updated.

## 2.Challenges Facing Digital Transformation in the Deanship of Admissions and Registration

Despite the importance of digital transformation, its implementation has faced several challenges, which can be summarized as follows:

- Financial Challenges: The high cost of hardware and software, training, maintenance, and upgrades.
- Administrative Challenges: The prevalence of traditional culture and the resistance to technological change in previous stages.
- Technical Challenges: The lack of technical infrastructure such as servers, computers, and terminals, in addition to the limited number of qualified personnel in the fields of programming, operation, and maintenance, as well as the compatibility of new systems with existing ones (if any).
- Human Challenges: Resistance to change among middle and lower management levels, along with poor training due to financial reasons.
- Security Challenges: Concerns related to data security and privacy protection.

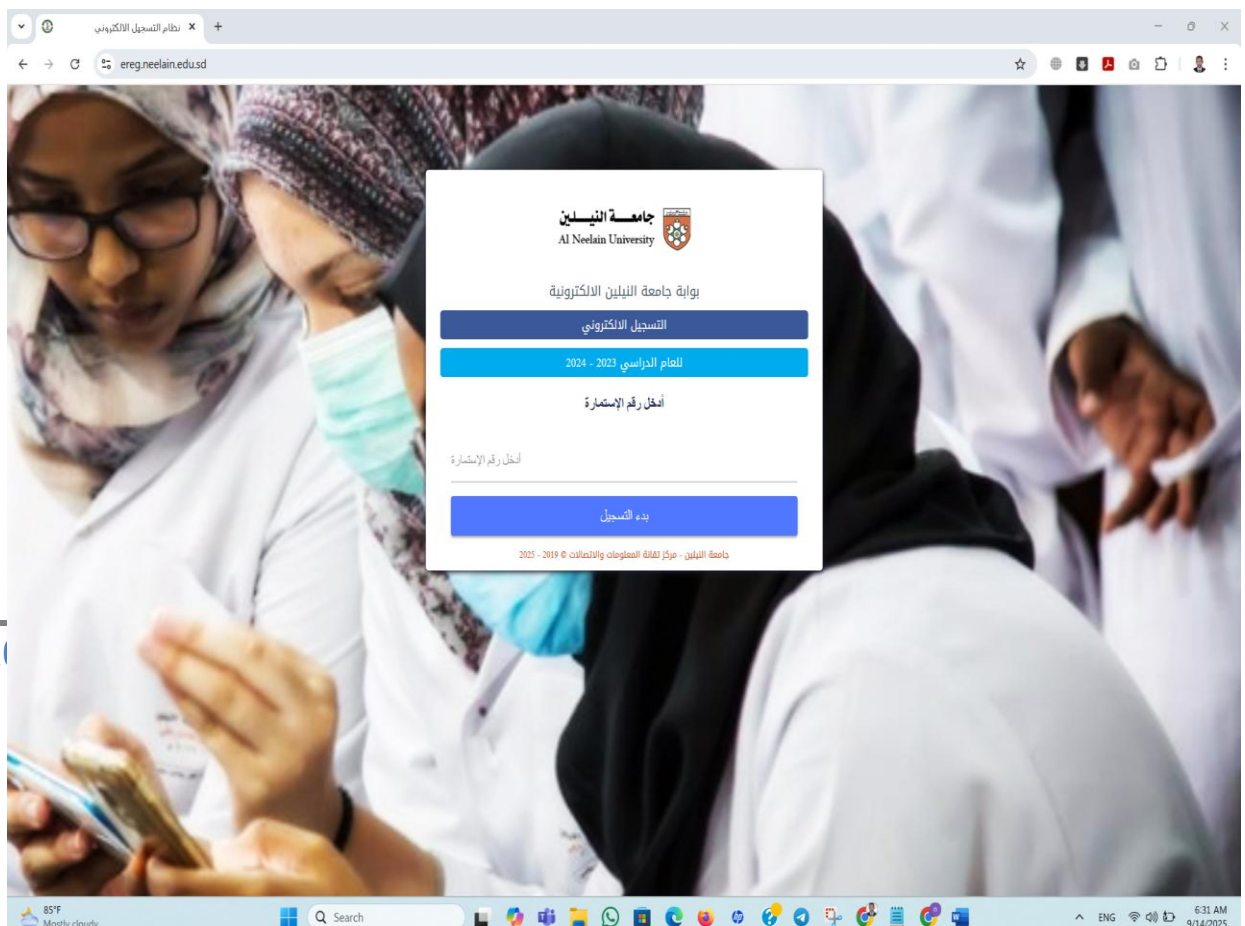
## 3.Solutions for Digital Transformation in the Deanship of Admissions and Registration

- Financial: Allocating appropriate budgets and providing funding to implement digital transformation.
- Administrative: Developing plans to change concepts and beliefs, then establishing clear policies for digital transformation.

- Technology: Developing and updating infrastructure (hardware, software, and networks) and implementing comprehensive educational process management systems.
- Human Resources: Training and technically developing employees, motivating them, and rewarding those who contribute to digital transformation.
- Security: Providing software and hardware security guarantees and solutions.
- Technical Support: Providing technical support to system users, including employees and students (seminars, lectures, video clips, applications, and guidance tools) that explain how to use the system and the services available.

#### 4. Computerized Systems Developed and Implemented at the University

1. The Electronic Registration System for New Students: This is a dedicated digital portal that allows students to log in using their application number, then fill out the registration form with the required information and attach official documents and a medical examination.



After completing these steps, the system issues a statement containing the student's data, tuition and registration fees, and payment details available through various banking applications using the university ID number.

Figure (1) Screen of the Registration System for New Students

2. Student Financial System: This is a dedicated electronic system that enables the Deanship of Admissions and Registration to track tuition fee payments collected through banking applications linked to the system. This allows the Deanship to issue comprehensive and accurate reports on financial revenues and submit them to the university administration



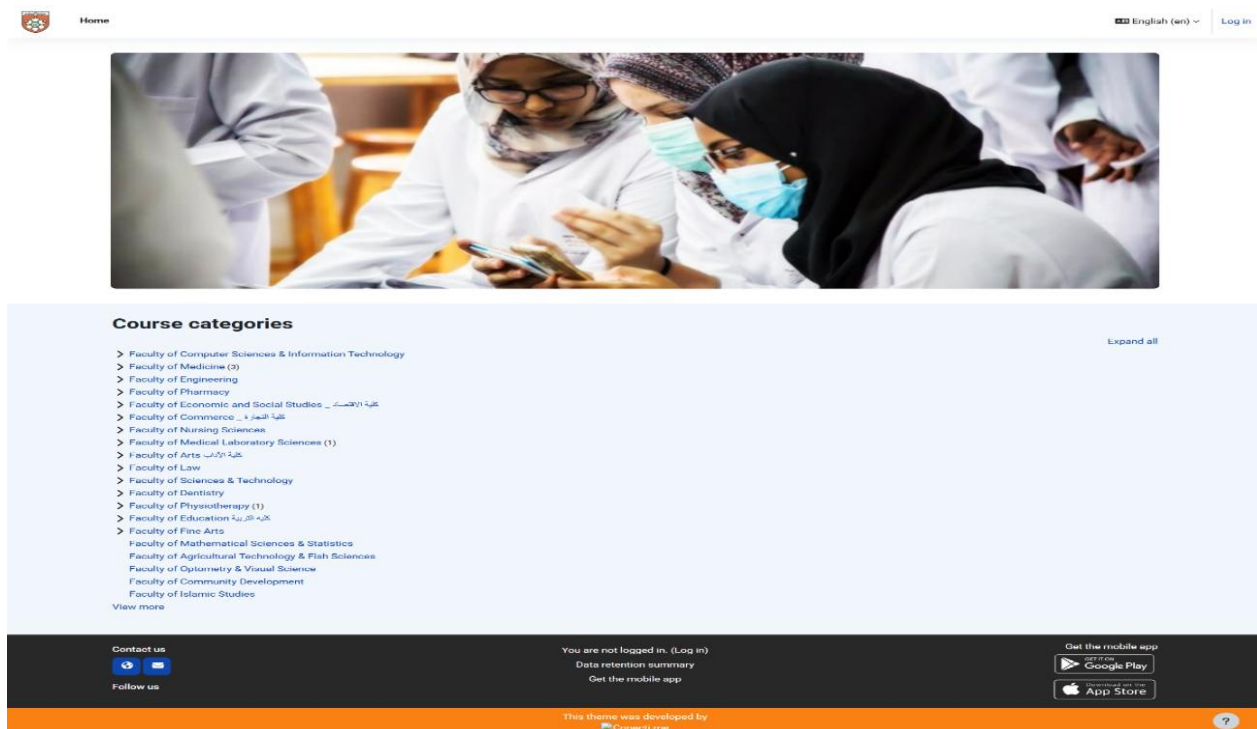
to support the decision-making process.

Figure (2) Student Financial System

3. Learning Management System (LMS): This is an integrated digital platform used to organize the educational process electronically. It

allows faculty members to upload courses and educational materials, manage lectures and activities, and design electronic tests. It also enables students to follow their lessons, interact with professors, complete assignments, and view their academic progress reports.

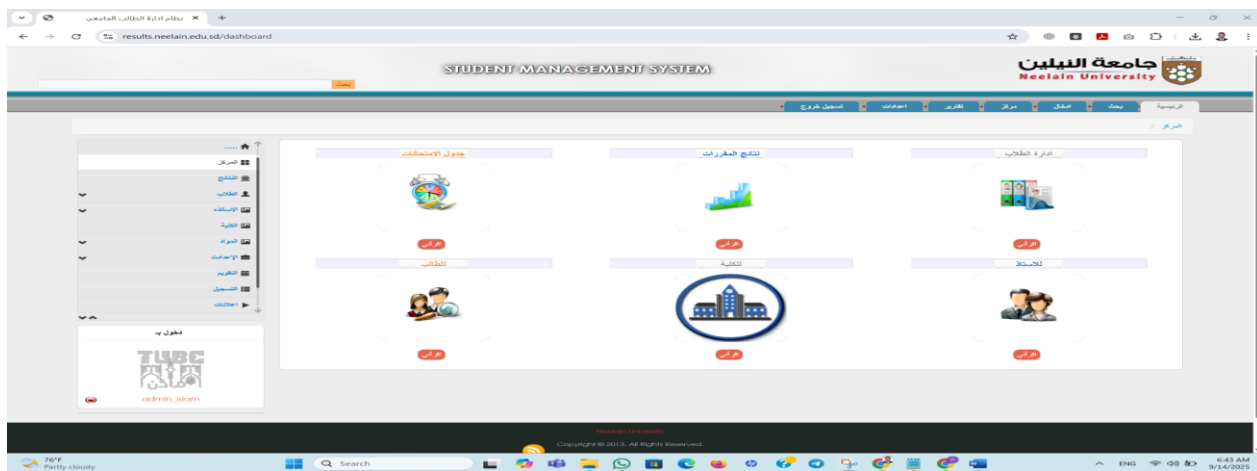
The University of Al-Neelain has adopted this system as part of its digital transformation strategy. It provides an electronic learning platform that supports distance learning and integrates with other smart systems, such as the registration and results system. This allows for greater flexibility in the educational process and easier access to



academic content for students inside and outside Sudan.

Figure (3) Education Management System

4. Student Results Processing System: An electronic system dedicated to entering and monitoring grades, then processing them and issuing semester and cumulative grade point averages accurately and quickly. At the University of Al-Neelain, this system represents a qualitative shift in results management, helping to reduce human error and ensure transparency in providing results to students in record time. It also enables the administration to extract statistical reports that support



academic decisions.

Figure (4) Student Results Processing System

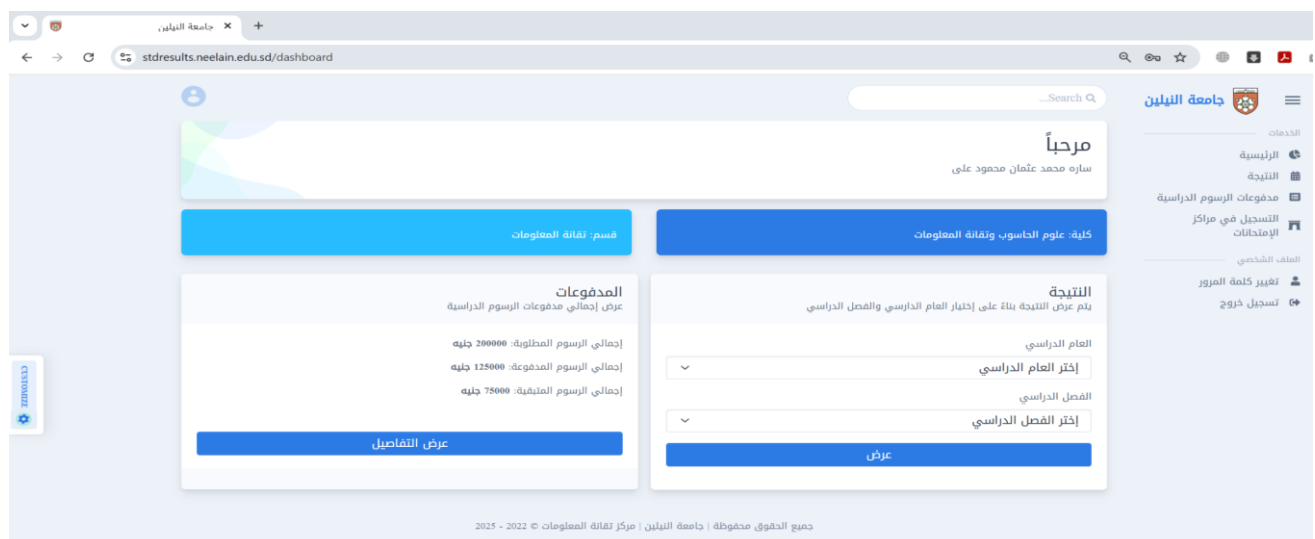
5. Student Services Portal: This represents one of the most important modern digital initiatives adopted by universities within the framework of digital transformation. It provides a unified electronic platform that brings together various academic and administrative services into a single interface for students. The portal aims to facilitate the completion of university transactions online and reduce the need for paperwork or direct visits to deanship offices, thus contributing to increased performance efficiency and improved service quality.

The portal provides students with several essential services, most notably:

- Tracking tuition payment by viewing the prescribed fees and payment status via banking applications linked to the system.

- Viewing academic results for various semesters instantly and accurately, enhancing transparency and providing quick access to information.
- Registering for exam centers electronically, which facilitates student allocation procedures and ensures more efficient organization and management of exams.

This portal has helped improve the student experience at the university by linking it to other systems such as the financial system, the registration system, and the Learning Management System (LMS). This has made it a central access point for all digital services and has clearly



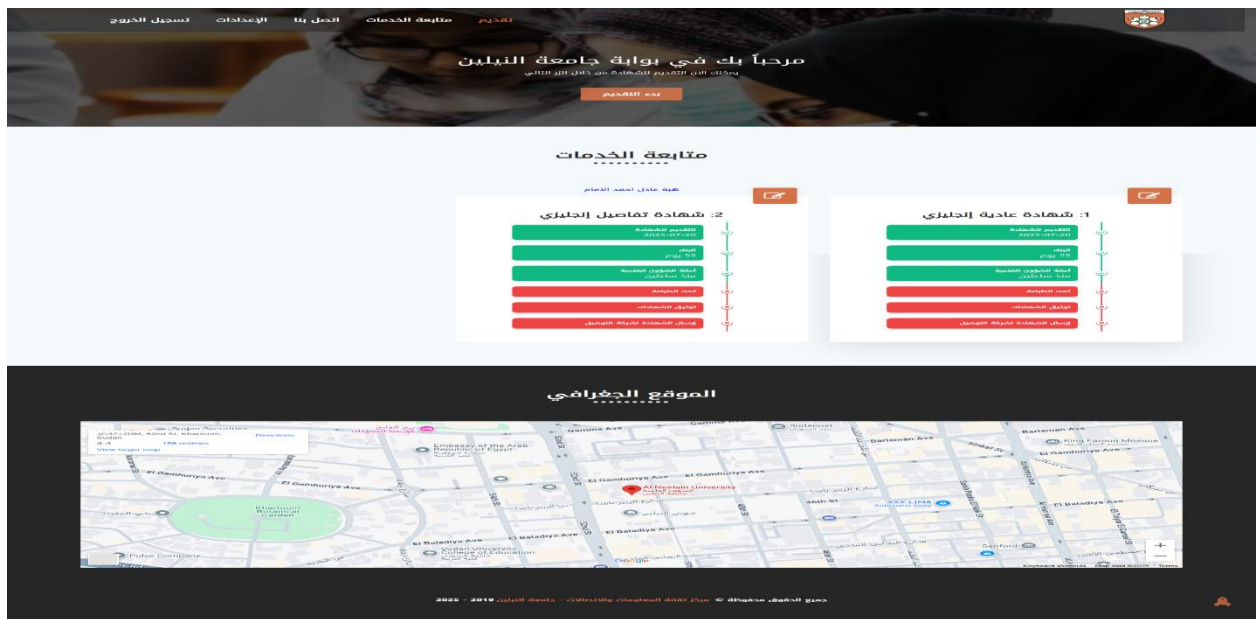
contributed to raising student satisfaction with the services provided.

Figure (5) Student Services Portal

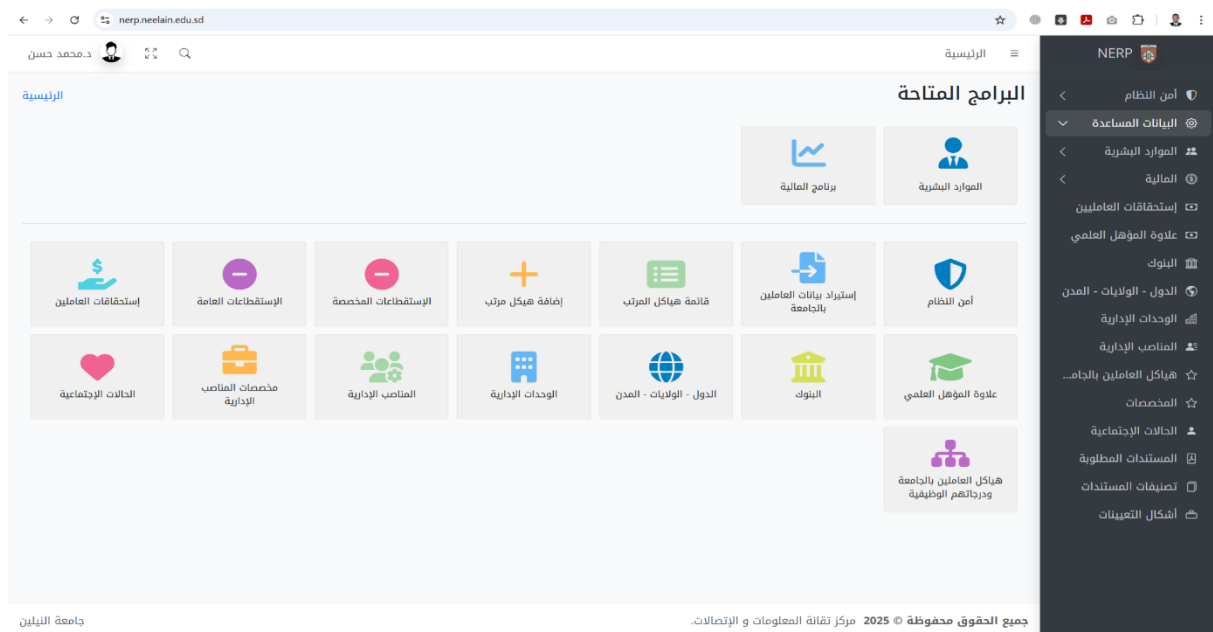
6. Issuing Academic Certificates: This is one of the smart systems developed by Al-Neelain University with the aim of simplifying one of the most common administrative transactions among students and graduates. Through a centralized portal, students and graduates can request certificates online by submitting necessary details and documents, without the need to visit the administration offices directly.

In addition, the application process can be tracked electronically, from submission to completion of various administrative procedures, reducing time and effort for beneficiaries. Certificates issued by this system also feature a QR code, facilitating verification via digital platforms. This enhances academic credibility, helps reduce forgery, and ensures the reliability of academic qualifications.

Figure (6) Results Extraction System



7. University Administrative System: As part of its drive towards digital transformation and building a "paperless university," Al-Neelain University launched its Administrative and Financial System (ERP) in 2025, developed internally by the university's Information and Communication Technology Center (Al-Neelain U, 2025) . The system aims to automate all administrative and financial processes, contributing



to improving the efficiency of human and financial resource management, standardizing procedures, and enhancing communication between various administrative units. The system also provides accurate reports that assist decision-makers and supports monitoring and evaluation through a unified central platform (Al-Neelain U, 2025) . This system represents a qualitative shift in the university's institutional work environment, as it has contributed to accelerating administrative procedures, enhancing transparency and accuracy, and supporting sustainability by reducing reliance on paper. The system also represents a strategic step towards building an integrated digital infrastructure capable of linking various systems within the university.

Figure (7) University Administrative System



## A Detailed Overview of the Implemented Admission Systems

### Electronic Registration System for New Students

Al-Neelain University launched the first version of the electronic registration system for new students in the 2019-2020 academic year, marking a pioneering step towards automating all admission and registration procedures. The system relies on completing all steps electronically according to an integrated mechanism, starting from the moment the student enters the portal until the registration process is fully completed.

The registration steps are as follows:

1. Logging into the System: The student logs into the electronic portal by using the admission form number to display their basic information, such as name, college, and department.
2. Complete Personal Information: The student continues to enter and complete the required information via the electronic form.
3. Conduct a Medical Examination: After entering the information, the medical examination form appears. The student then heads to the nearest medical center or government hospital for examination. The approved medical examination form is then uploaded to the system.
4. Approval of the Medical Examination: Admissions Deanship staff will review the form, verify its accuracy, and then approve it electronically.
5. Pay Tuition Fees: The student pays their tuition fees using their university number via the university's approved banking applications (such as Faisal Islamic Bank and Omdurman National Bank).
6. Integration with Administrative Units: The data is automatically sent to the Deanship of Student Affairs to conduct a social case study and to the University Cards Department to issue the university card.

Thus, this fully electronic process removes the dependency on paper-based procedures. This has contributed to reducing effort and time, alleviating

administrative congestion, and improving the efficiency and quality of services provided to students.

### **Student Financial System**

The Student Financial System represents a key component of the digital transformation system at Al-Neelain University, enabling effective integration between university administration and students in managing and monitoring financial affairs. This system is based on two main axes:

1. At the Deanship of Admissions and Registration Level:
  - Monitoring all student payments in real-time through a central database.
  - Generating comprehensive or detailed financial reports (at the college, department, or student level) to support planning and decision-making processes.
  - Enhancing financial control through direct integration with approved banking applications.
2. At the Student Level:
  - Students can access their financial account through the system using their university number and password.
  - Monitoring their tuition payments periodically throughout their academic years, with the ability to check their financial status at any time.
  - Viewing tuition payment dates before the start of exams, which helps avoid any administrative or academic setbacks.

Thus, the financial system contributes to achieving transparency, reducing errors, and facilitating continuous monitoring for both students and administration, enhancing the quality of the educational and administrative processes alike.

### **Examination Registration System**

- The student logs into the electronic portal using their university ID and password.
- Selects the appropriate examination center from among the available centers within the capital, the states, or outside Sudan.
- Confirms the registration process through the system, where the selected center data is saved in the student's academic file.
- Administrative review and approval by the Deanship of Admissions and Registration staff to verify the accuracy of the data.
- Provides the student with an electronic notification indicating the examination center registered for. This notification can be printed or saved for use on the day of the exam.

### Student Services Portal

This is a comprehensive portal for students through which they can:

- Track tuition fee payments.
- Register for examination centers.
- View academic results.

### Results and Discussion

#### 1. Electronic Registration:

Table (2): Number of Students Accepted via the Electronic Registration System

Academic Year	Number of Accepted Students
2019 – 2020	12,783
2020 – 2021	8,349
2021 – 2022	7,352

2022 – 2023	9,050
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Statistics on students accepted during the academic years (2019-2023) indicate a clear fluctuation in the number of students. The number reached 12,783 in 2019-2020, decreased to 8,349 in 2020-2021, then to 7,352 in 2021-2022, before rising again to 9,050 in 2022-2023. This disparity is linked to the political and health events the country has experienced, such as the COVID-19 pandemic, periods of sit-ins, and, most recently, wartime conditions.

- In 2020 and 2021, the electronic registration system was partially implemented, with medical examinations being completed at the university and then uploaded to the system.
- From 2022 to 2023, the system transitioned to fully electronic registration, with medical examinations uploaded to the system from hospitals and government centers and approved electronically by the university doctor.
- Registration was completely halted in 2024 and 2025 due to the lack of new students being accepted during that period.

## 2. Electronic Transactions

Table (3): Number of completed electronic transactions (2021–2025)

Type of Transaction	2021	2022	2023	2024	2025
Registration	0	0	175	320	503
Resignation	0	0	21	45	81
Transfer Letter	0	0	25	37	110

Data on electronic transactions show that the years 2021 and 2022 did not witness significant demand for the use of the systems despite their

readiness. This was due to students' proximity to the deanships and their lack of complete confidence in the electronic systems. However, the year 2023 marked a true turning point, as students began completing their transactions entirely electronically.

- Registration certificate transactions reached (157) in 2023, increasing to (320) in 2024, then (503) in 2025 until September.
- Resignation requests recorded (21) transactions in 2023, increasing to (45) in 2024, then (81) in 2025 until September.
- Transfer letters reached (25) in 2023, increasing to (37) in 2024, and reaching (110) in 2025 until September.

It is noted that reliance on electronic systems for transactions has significantly increased in 2024 and 2025 because of the war that led to the displacement of students outside the city where the university's main headquarters is located, making electronic transactions the sole and necessary option.

### 3. Examination Registration System:

The exceptional circumstances facing the country led to the University of Al-Neelain's exams being moved from the college campuses to exam centers distributed inside and outside Sudan. The number of centers reached (17), comprising (9) internal centers and (8) external centers. When the exam schedules are announced, the electronic system is opened to allow students to choose the center closest to them, facilitating the university administration's process of distributing committees, supervisors, and exam papers according to the number of students registered at each center. The following tables show statistics for students at exam centers from December 15, 2024, to September 27, 2025.

1. Internal Centers:

Colleg e	Center	Dongola Center	Shendi Center	Gedaref Center	Port Sudan Center	Kassala Center	Al-Dammer Center	Kosti Center	Al-Obeid Center	Khartoum Center	Total Students
Law		118	335	86	126	104	212	184	18	0	1183
Commerce		663	1281	588	623	393	1306	1432	124	2580	8990
Medicine		55	82	28	76	43	121	85	8	21	519
Economic Studies		289	637	349	451	245	770	738	101	1291	4871
Physiotherapy		29	72	17	28	23	56	41	0	62	328
Nursing Sciences		36	20	10	19	6	32	41	9	11	184
Education		0	0	0	0	4	2	4	2	0	12



Dentistry	5	35	20	36	0	32	27	7	14	176
Literature	187	729	83	193	140	212	356	29	0	1929
Science & Technology	28	91	40	21	31	66	135	10	32	454
Arts	3	12	3	5	8	13	6	1	18	69
Computer Science	75	68	58	88	35	110	124	11	625	1194
Pharmacy	38	29	13	22	16	46	51	7	142	364
Agriculture	6	3	14	6	7	16	38	3	30	123
Petroleum & Minerals	29	28	17	33	28	74	67	6	221	503
Medical Laboratory Science	3	1	2	9	20	4	13	0	57	109
Statistics	3	8	7	9	25	13	34	4	105	208
Engineering	59	55	14	146	27	93	78	7	395	874
Optical Sciences	56	41	31	13	13	29	40	2	199	424



Total	1682	3527	1380	1904	1168	3207	3494	349	5803	22514
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2. External Centers:

Colleg e	Center	Dubai	Cairo	Doha	Tripoli	Muscat	Kampala	Medina	Benghazi	Total Students
Law		23	244	19	13	2	36	75	14	426
Commerce		104	1031	93	48	15	92	377	101	1861
Medicine		59	200	18	3	22	8	215	4	529
Economic Studies		57	627	35	37	12	60	155	61	1044
Physiotherapy		48	72	8	0	8	8	51	5	200
Nursing Sciences		26	16	56	3	5	3	430	0	539
Education		0	2	0	0	0	0	0	2	4
Denstistry		6	24	3	4	11	0	63	1	112
Literature		20	302	12	16	4	17	68	17	456



Science & Technology	5	45	3	10	3	7	15	4	92
Arts	1	29	0	0	1	3	5	1	40
Computer Science	27	176	24	5	4	12	85	12	345
Pharmacy	17	83	5	3	2	3	55	2	170
Agriculture	1	13	0	2	0	2	0	1	19
Petroleum & Minerals	2	46	3	2	0	5	14	12	84
Medical Laboratory Science	6	19	3	0	0	4	21	1	54
Statistics	1	27	1	2	0	1	9	4	45
Engineering	57	210	15	7	0	12	135	18	454
Optical Sciences	5	25	2	0	3	2	35	2	74
Total	465	3191	300	155	92	275	1808	260	6546

Comparison between internal and external centers by college

College	Number of Students (Internal)	% of Total Internal	Number of Students (External)	% of Total External
Commerce	8,990	39.9%	1,861	28.4%
Economic and Social Studies	4,871	21.6%	1,044	16.0%
Literature	1,929	8.6%	456	7.0%
Law	1,183	5.3%	426	6.5%
Computer Science & Information Technology	1,194	5.3%	345	5.3%
Engineering	874	3.9%	454	6.9%
Medicine	519	2.3%	529	8.1%
Pharmacy	364	1.6%	170	2.6%
Optical Sciences	424	1.9%	74	1.1%
Physiotherapy	328	1.5%	200	3.1%
Science & Technology	454	2.0%	92	1.4%
Petroleum & Minerals	503	2.2%	84	1.3%



Mathematical Sciences & Statistics	208	0.9%	45	0.7%
Dentistry	176	0.8%	112	1.7%
Nursing Sciences	184	0.8%	539	8.2%
Fine Arts & Design	69	0.3%	40	0.6%
Agricultural Technology & Fisheries	123	0.5%	19	0.3%
Medical Laboratory Sciences	109	0.5%	54	0.8%
Education	12	0.05%	2	0.03%
Total	22,514	100%	6,546	100%



- The highest number of internal students: the Faculty of Commerce (39.9%), Economics and Social Studies (21.6%), and then the Faculty of Arts (8.6%) (internal). External students: the Faculty of Commerce (28.4%), followed by Economics and Social Studies (16%), Nursing Sciences (8.2%), and Medicine (8.1%). This is attributed to the large number of students in the humanities colleges (Commerce, Economics, and Arts).
- Medical colleges (Medicine, Nursing, Dentistry, and Pharmacy) have a relatively higher number of external centers compared to internal centers.

### Recommendations

Based on the study results and an analysis of the University of Al-Neelain's experience, the study recommends the following:

1. Strengthening digital infrastructure: The state and the university must work to develop and expand digital infrastructure, including networks, servers, and computers, to ensure the sustainability and operational efficiency of electronic systems.
2. Enhancing reliance on electronic transactions: Clear and encouraging policies should be developed to support the full reliance on electronic academic and administrative transactions. This will contribute to reducing paperwork, accelerating services, and achieving accuracy in data collection and processing.
3. Developing a unified application: The study recommends designing and implementing a comprehensive smartphone application that integrates all the electronic systems students need (registration, results, transactions, exams), facilitating the user experience and providing a unified interface for interacting with university services.



4. Continuous training for staff: The study recommends investing in periodic training programs targeting academic and administrative staff to enhance their efficiency in dealing with digital systems and reduce resistance to change, ensuring the effectiveness and sustainability of digital transformation.

## Conclusion

This study concludes that digital transformation is no longer a luxury or a secondary option. Rather, it has become an essential element in improving administrative and academic performance in higher education institutions in general, and at Al-Neelain University in particular, particularly in the Deanship of Admissions and Registration, which represents the primary and most interactive interface with students. The digital systems implemented in the Deanship have helped students complete their academic and administrative transactions quickly and at a low cost, as requests are responded to immediately, enhancing the efficiency of services provided and increasing customer satisfaction.

These systems have also enabled senior management to access accurate reports that support strategic decision-making, including conducting surveys when necessary and obtaining accurate statistics on student distribution inside and outside Sudan, as in the examination registration system.

Despite these successes, the study confirms that digital transformation still faces several challenges that limit its rapid implementation and sustainability. Prominent among these challenges are the weakness of the technical infrastructure, the lack of adequate funding, and the shortage of specialized personnel due to the conditions of war and displacement, which have led to a migration of skilled workers. Furthermore, some employees resist the culture of change for fear of being replaced or losing control. Issues of data confidentiality and security also pose a fundamental challenge that requires careful handling to ensure information protection.

Therefore, promoting digital transformation in universities requires strong institutional will and sustainable financial and technical support, as well as disseminating a culture of change and continuous training for staff. This ensures the sustainability of this transformation and the achievement of its goals of improving the quality of university education and enhancing the efficiency of administrative performance.

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