DIRECTORATE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (DICT)

DOW UNIVERSITY OF HEALTH SCIENCES

STRATEGIC PLAN

(2024 – 2027)

Pioneering Excellence | Inspiring Innovation

To Heal | To Educate | To Discover


بِسْمِ اللَّهِ الرَّحْمَٰنِ الرَّحِيمِ

TABLE OF CONTENTS

DIRECTOR'S MESSAGE

As the Director of IT at DUHS, I am excited to share our strategic plan for the next three years. It aims to leverage information technology to transform medical education, research, and healthcare delivery. Our strategy centers on automating key administrative and clinical processes to drive efficiency, enhance decision-making, and streamline operations across all departments. We are committed to implementing robust ICT policies and adopting best practices to ensure the secure, efficient, and innovative use of technology across the university.

A major focus will be on modernizing our IT infrastructure to support the increasing demands of medical education and digital healthcare services. By introducing state-of-the-art digital tools, we will facilitate collaboration in medical research and improve teaching methodologies. Additionally, we will prioritize continuous professional development, providing ongoing training programs to enhance the digital skills of our staff, faculty, and students.

Recognizing the importance of seamless integration with external healthcare organizations, we will work to strengthen ICT collaboration with hospitals and clinics. Our strategic plan also includes developing a comprehensive technical support system to ensure the uninterrupted operation of all IT services. We will regularly update our digital platforms and websites to showcase the latest research, developments, and innovations within DUHS.

By focusing on sustainable IT practices and embracing emerging technologies like AI, big data, and telemedicine, we will ensure that DUHS remains at the forefront of medical education and healthcare. This strategy will position DUHS as a leader in advancing healthcare and education through transformative ICT solutions.

Mr. Shahzad Ahmed

EXECUTIVE SUMMARY

The Strategic Plan for the Information and Communications Technology Directorate, DUHS, outlines a three-year roadmap to transform medical education, research, and healthcare delivery through innovative ICT solutions. The plan focuses on automating administrative, academic, and clinical processes to enhance operational efficiency and decision-making. Key initiatives include modernizing IT infrastructure to support advanced medical technologies, developing ICT policies and best practices, and implementing cutting-edge digital tools to foster collaboration, innovation, and excellence in education and research.

A robust technical support framework will ensure seamless service delivery, while continuous training programs will enhance IT skills across departments. ICT will work closely with healthcare organizations to integrate ICT into clinical services and operations, strengthening DUHS's role in healthcare delivery. Regular updates to digital platforms will highlight advancements in medical education and research.

The plan also emphasizes sustainability and emerging technologies such as AI, big data, and telemedicine to position DUHS as a leader in digital transformation for education and healthcare. By aligning IT projects with institutional goals, this strategic vision ensures that DUHS remains at the forefront of innovation and excellence in the medical field.

ABOUT THE DEPARTMENT

The Directorate of Information and Communication Technology (ICT) plays a pivotal role in managing and enhancing the technological, communication, and information systems of an organization, including specialized areas such as healthcare facilities, research, and infrastructure development. Its primary mission is to provide secure, scalable, and efficient ICT solutions that support digital transformation, facilitate innovation, and enable effective communication and integration. In healthcare, ICT supports advanced systems for patient management, telemedicine, electronic health records, and diagnostic technologies.

For research, it ensures access to high-performance computing, data analytics tools, and collaborative platforms to support innovative studies and knowledge sharing. Its infrastructure includes On-premises and On-cloud resilient networking systems and cybersecurity solutions for data privacy. Despite offering robust facilities, the ICT faces challenges such as adapting to rapid technological changes, addressing evolving cybersecurity threats, managing budget limitations, and ensuring compliance with data privacy laws.

Additional obstacles include integrating legacy systems with modern solutions, maintaining skilled personnel, and fostering user adoption of new technologies. Nonetheless, the Directorate of ICT remains a cornerstone in driving technological advancements across healthcare, research, and education, contributing to organizational growth and operational excellence. The ICT also implements cutting-edge hardware and software technologies to support routine operations and long-term strategic goals.

INTRODUCTION & OVERVIEW

NETWORK AND INFRASTRUCTURE UNIT

The networks & infrastructure unit of the directorate of ICT provides a robust and scalable network infrastructure designed to meet organizational needs. This includes high-speed internet & campus-wide redundant connectivity, protected via machine learning firewalls combined with artificial intelligence-based network threat detection & secure network gateway access controller. The virtualization infrastructure comprises cloud-based and on-prem data centers, which ensures seamless communication, data sharing, and resource availability. In addition, redundant infrastructure (networks & systems) and disaster recovery plans are in place to guarantee uninterrupted services and high system availability.

BUSINESS APPLICATION DEVELOPMENT & ADMINISTRATION UNIT

The BADA unit focuses on the design, development, and management of customized business applications tailored to organizational requirements. It ensures that all applications are user-friendly, scalable, and aligned with business objectives. The unit is also responsible for application integration, providing centralized platforms that streamline operations and enhance efficiency. Continuous monitoring and updates are performed to maintain the relevance and security of these applications, ensuring optimal performance.

OPERATIONS AND MAINTENANCE UNIT

The operations and maintenance unit is responsible for ensuring the smooth operation of all ICT systems and services. Regular maintenance schedules, performance evaluations, and timely upgrades are implemented to minimize downtime and prevent disruptions, troubleshoot technical issues, optimize system performance, and provide end-user support while managing several ICT-related departmental projects to ensure consistent and reliable ICT services. This unit also oversees overall ICT Asset Inventory management, security compliance, and effective end-user support with the aid of an advanced ticketing system.

ICT GOVERNANCE AND QUALITY UNIT

This unit places a strong emphasis on IT governance to protect organizational assets and align ICT strategies with overall business goals. This involves establishing policies and frameworks for data management, resource allocation, and decision-making processes. Security framework measures such as firewalls, encryption, and intrusion detection systems are implemented to safeguard against cyber threats. Compliance with data privacy regulations and industry standards is strictly enforced to ensure operational integrity.

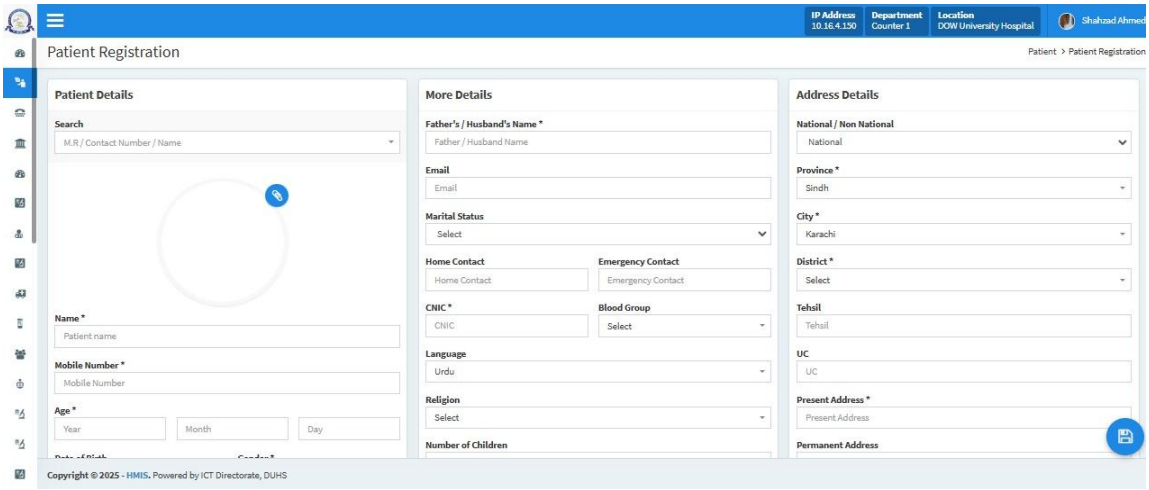
ICT SERVICES

1. Implementation of Hospital Information Management Systems (HMIS).

- An Electronic Health Records (EHR) system is made available in all hospitals and affiliated healthcare facilities to centralize patient data and streamline access to medical records.
- The EHR system allows clinicians to access patient histories, lab results, imaging, and treatment plans digitally, reducing the need for paper-based records.

Impact:

- Enhanced Patient Care: Doctors and medical staff have immediate access to comprehensive patient records, leading to more informed clinical decision-making.
- Operational Efficiency: The shift from manual record-keeping to digital records has improved the speed and accuracy of patient data management, reducing errors and redundancies.



2. Laboratory Information Systems (LIS) and Automation in Diagnostic Labs

- DUHS has integrated Laboratory Information Systems (LIS) into its diagnostic labs, including the Dow Diagnostic Reference & Research Laboratory (DDRRL). This system automates sample management from collection to reporting.
- The automation includes features like barcode scanning, tracking of specimens, and automated generation of diagnostic reports.

Impact:

- Faster Turnaround Times: The LIS automates many manual processes, enabling quicker lab test results and improving diagnostic efficiency.
- Error Reduction: Automation reduces the potential for human error in sample handling, processing, and report generation.

3. Automation in Pharmacy Services

- DUHS has automated its pharmacy management system to streamline inventory management, medication dispensing, and prescription management.
- The automation includes barcode scanning, tracking medication usage, and automatic inventory updates.

Impact:

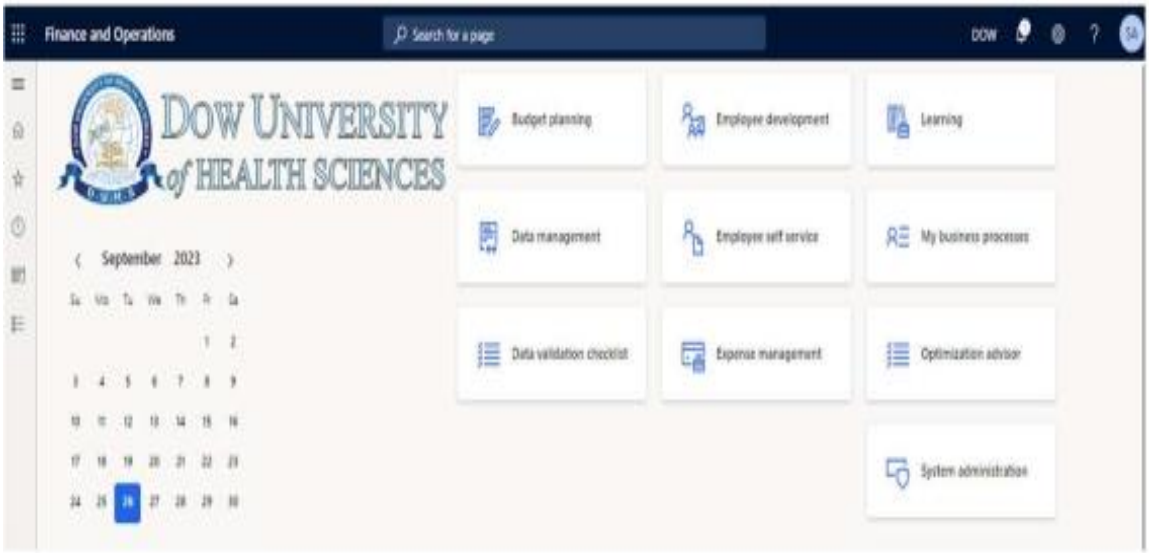
- Improved Patient Safety: Automation reduces medication errors, ensuring that patients receive the correct prescriptions in the right dosages.
- Efficient Inventory Management: Automated inventory systems ensure that pharmacy supplies are restored on time, reducing shortages and delays in patient treatment.

4. Automation of Administrative Processes Microsoft Dynamics 365 for Finance and Operations on cloud.

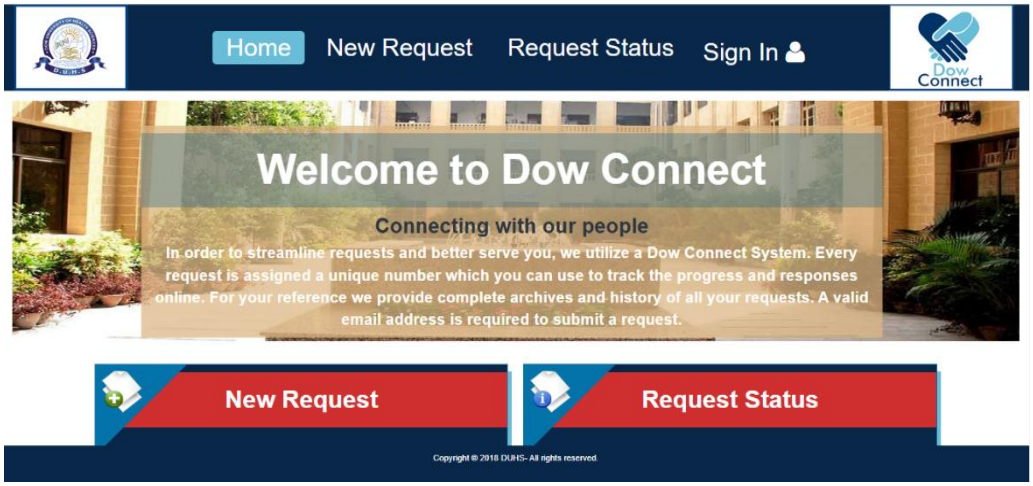
- The university has implemented an Enterprise Resource Planning (ERP) system (Microsoft Dynamics 365) to integrate these functions and automate repetitive tasks.
- Automation of several administrative processes, including HR and payroll management, financial operations, procurement, and supply chain management.

Impact:

- Operational Efficiency: Automation of administrative tasks reduces manual workload, improves data accuracy, and accelerates decision-making processes.
- Improve the functions of Human Resources, Procurement, Supply Chain Management, and Payroll.



5. Online Complaint Management System to register the complaints and feedback by students, patients, faculty, and staff.



6. E-Office Implementation in DUHS

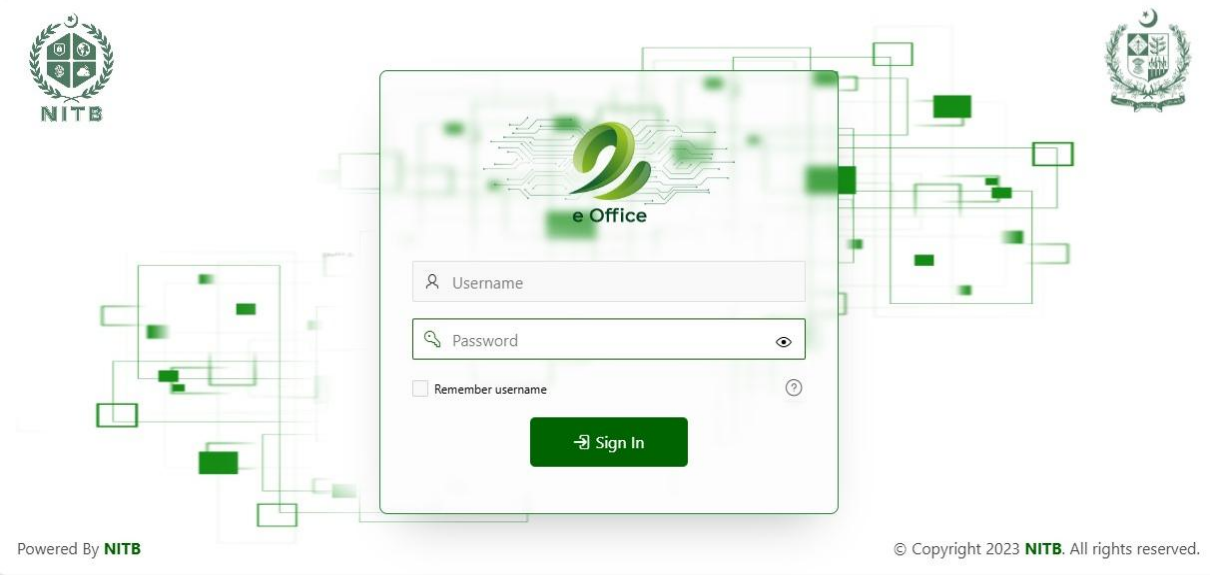
This project was launched by the National IT Board in 2007 and recently been awarded by the Sindh Government to DUHS. The new web version of e-Office incorporates innovative features to further enhance user experience and productivity.

- Digital signature support for notes and documents.
- Voice-based input for notes.
- Urdu language supports notes and documents.
- Executive dashboard for senior management.
- User-based conversation feature.
- Designation-based group view of notes with color coding.
- Enhanced search mechanism.
- Organization-based QR code generation with customizable fields.
- On-screen view of attachment contents in the notes screen.
- Activity monitoring, application runtime activity, and comprehensive reporting features.

Impact:

- Increased efficiency: e-Office eliminates the need for manual handling of files and documents, streamlining workflows and reducing processing times.
- Enhanced transparency: e-Office provides real-time visibility into the status of files and documents, fostering transparency and accountability.
- Cost-effective: e-Office reduces the need for paper, printing, and other physical resources, leading to significant cost savings.

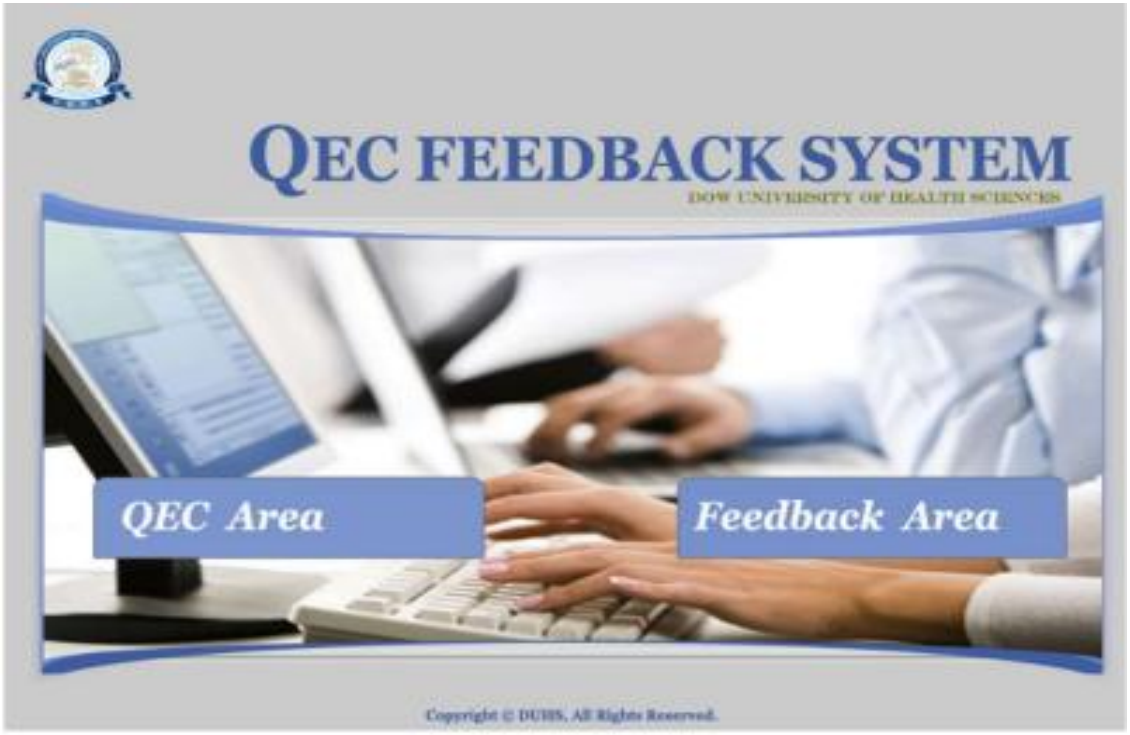
- **Improved data security**: e-Office implements robust security measures to protect sensitive data from unauthorized access.
- **Better collaboration**: e-Office facilitates seamless collaboration between employees, regardless of their location, enabling faster and more informed decision-making.



7. Students and Faculty Feedback Portal (feedback.duhs.edu.pk)

- Student Evaluation is being used to measure student progress, reform education systems, and enhance accountability for outcomes. Quality Enhancement Cell, DUHS, is conducting evaluations of students and faculty to improve performance and foster creative spaces for learning.

- The Faculty Evaluation System promotes excellence by rewarding exemplary faculty and by providing the means of individual professional development, resulting in improved student learning and institutional quality.

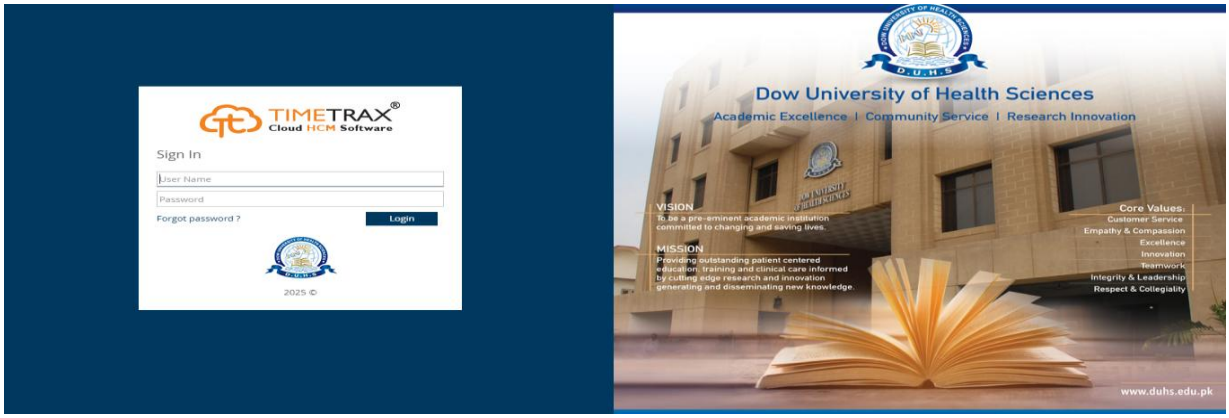


8. Digital Libraries allow students and faculty to access international research journals from home and campus.

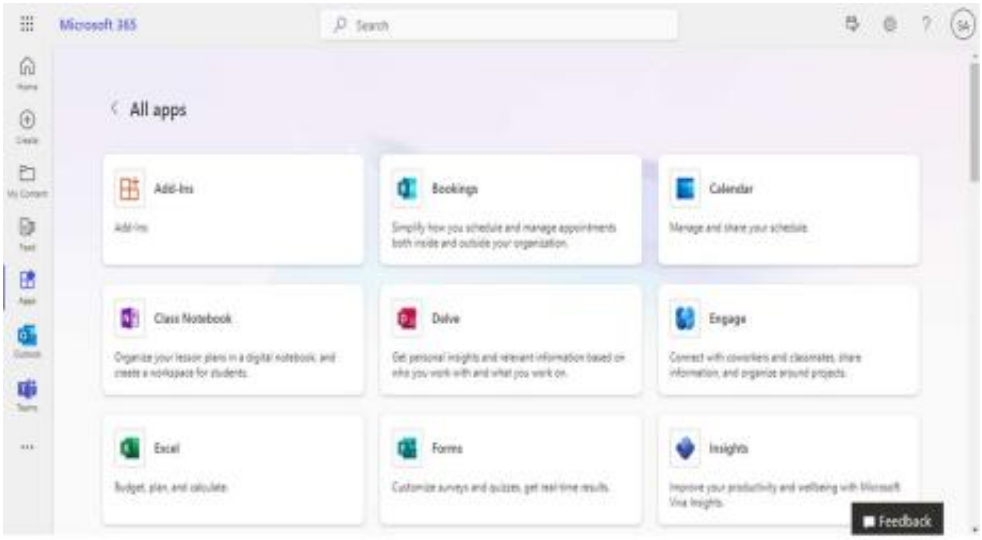
   http://www.digitallibrary.edu.pk/

9. Biometric Attendance System for Faculty and Staff.

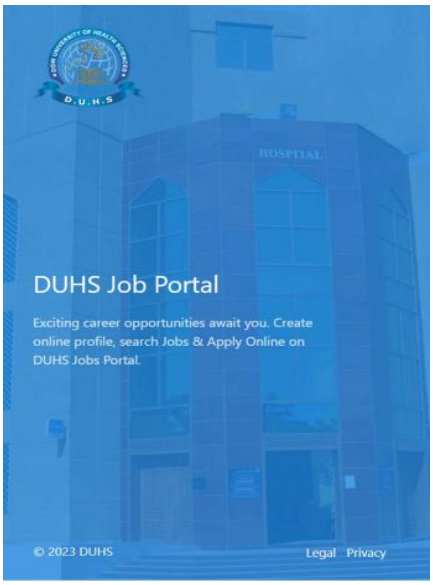
   - Cloud-based Staff Portal for employee attendance, leave management, and analytical reports related to attendance. It is Integrated with a Biometric Attendance System and Payroll system to automate the processes.



10. Cloud-based Microsoft Office 365 for Students, Faculty, and Staff.

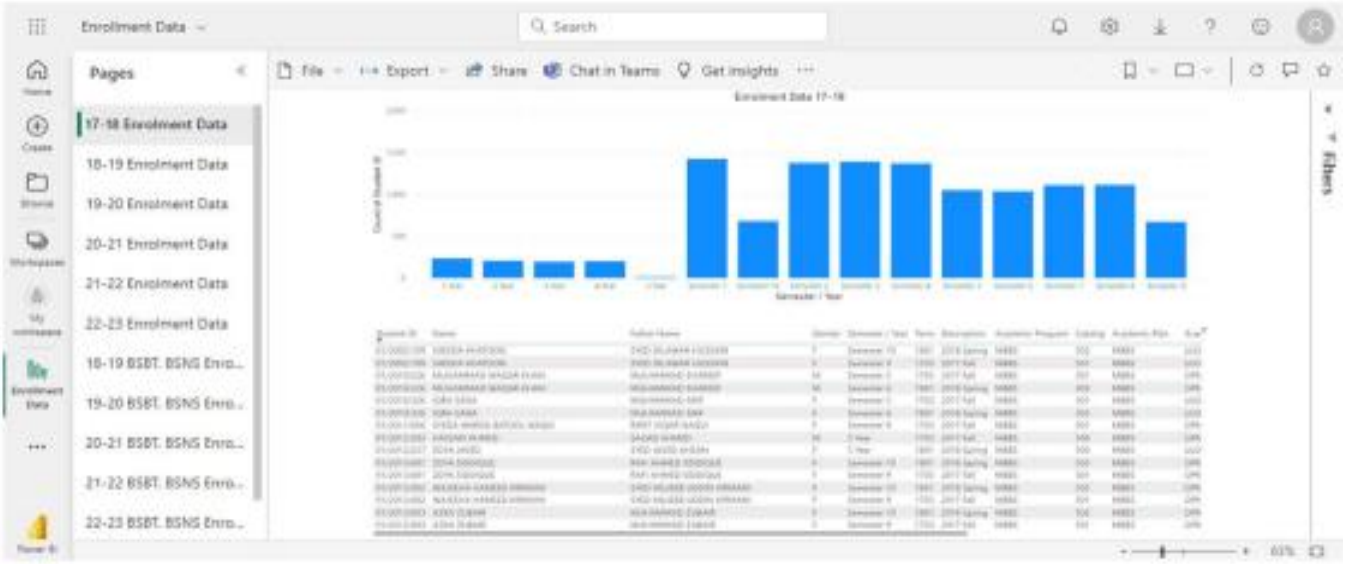


11. Online Job Portal for applicants to apply for teaching and non-teaching jobs.

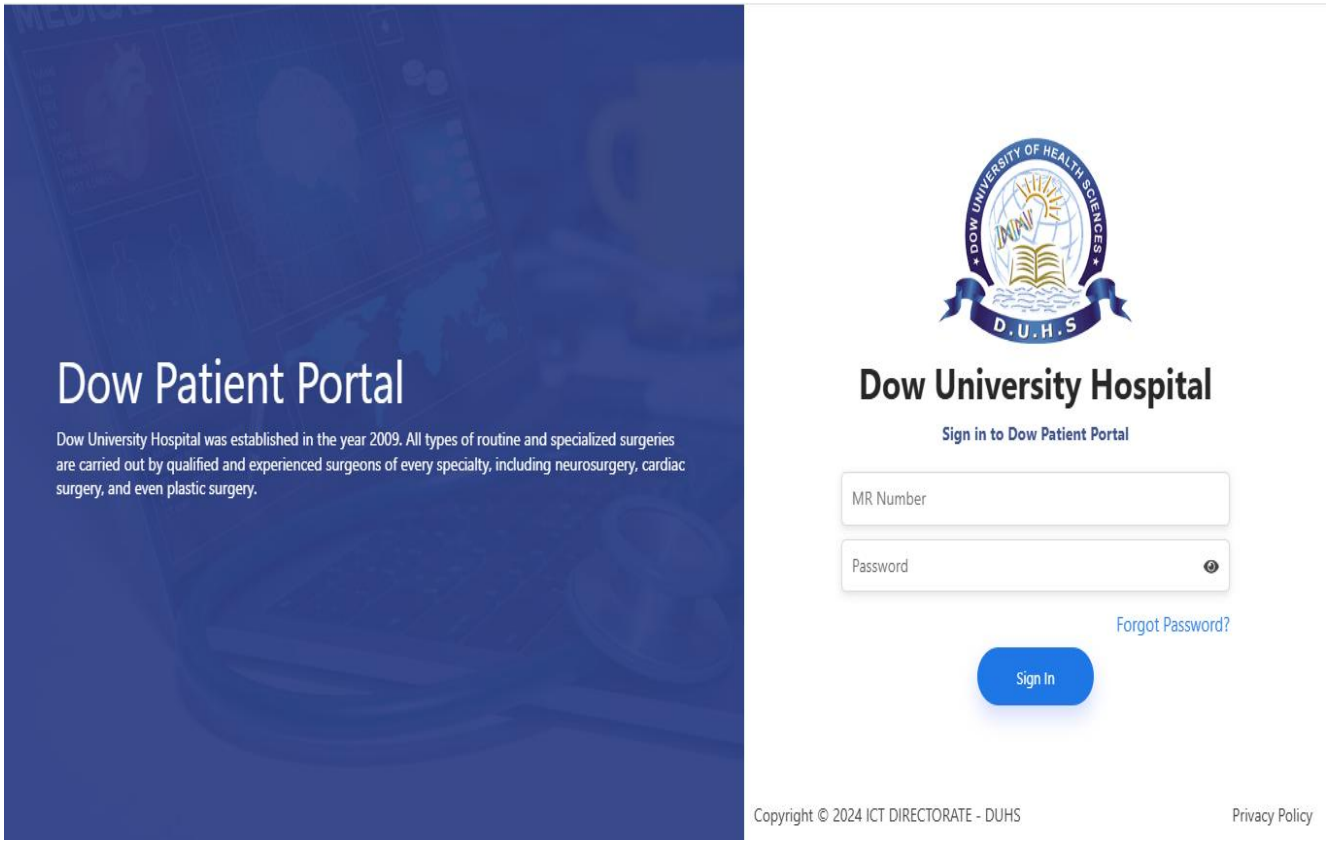


12. Cloud-based Microsoft Power BI for Data Analytics and Dashboard Reporting.

To facilitate improved decision-making and strategic planning for the future.



13. An online EMR patient portal for lab and Radiology reports.



14. Microsoft Teams for Students, Staff, and Faculty for online meetings and video conferencing.

15. Google Workspace for Students, Staff, and Faculty (Google Meet for online meetings, Office Tools, Google Classroom, Google Drive, Forms, Calendar, etc.).

16. Campus-wide High-speed internet and Wi-Fi connectivity for students, faculty, and staff.

17. Establishment of Smart Classrooms.

- The establishment of a Smart Classroom setup plays a pivotal role in enhancing student-teacher interaction through interactive online and distance learning, bridging the gap of good faculty, meeting the shortage of faculty members at the universities/ campuses located in far-flung areas, and ultimately uplifting the standard of education across the board.
- Each site has a 30 30-student sitting capacity.
- The Voice Tracking camera for teacher tracking and student tracking allows a hands-free environment for the speaker and students as well. It creates an engaging video for sharing and recording during lectures, video conferences, speeches, and demonstrations.

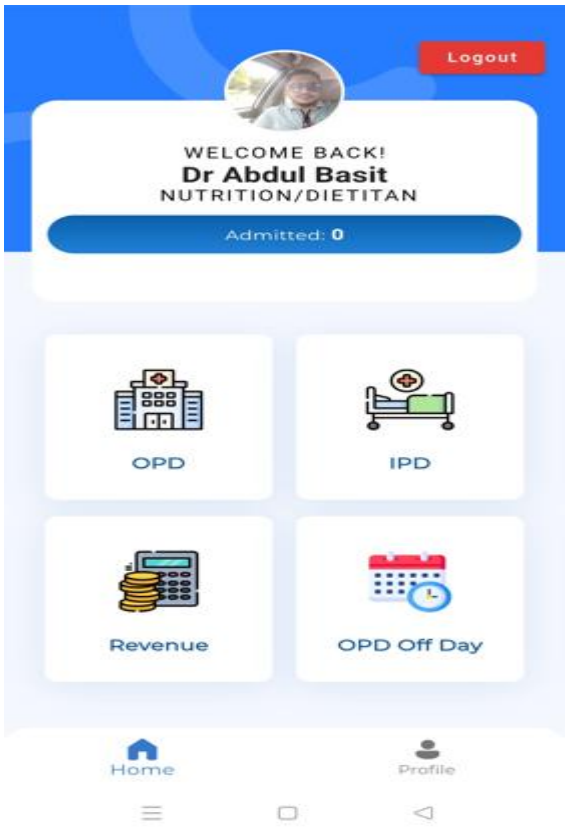
18. Cloud-Based Learning Management System (LMS)

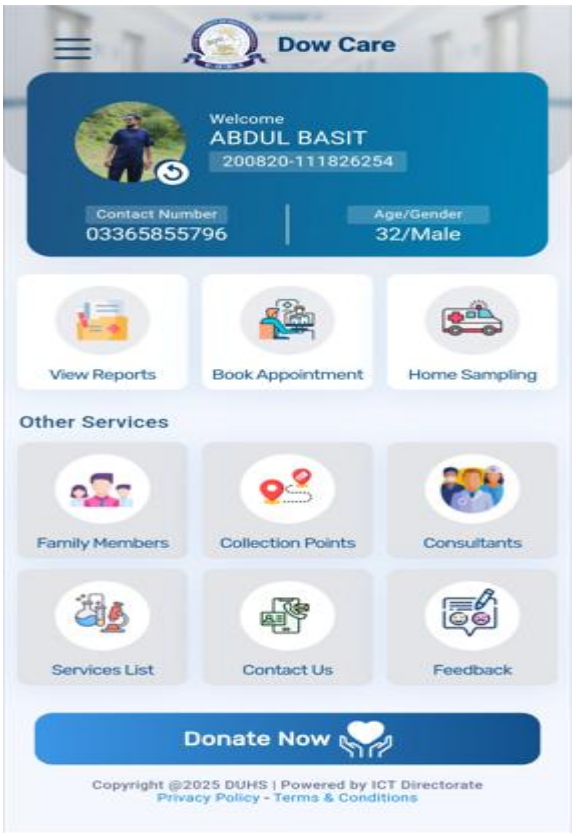
- DUHS has implemented cloud-based Learning Management Systems (LMS) to support digital education for students. This includes platforms for online coursework, assessments, and virtual classrooms.
- Additionally, the university has adopted cloud storage solutions (REDCap) to support research activities, allowing researchers to access shared data, collaborate on projects, and store large datasets securely.

Impact:

- Remote Learning Access: Medical students and faculty have access to course materials, virtual labs, and online lectures, improving learning flexibility.
- Enhanced Research Collaboration: Researchers can access and share data in real time, enabling collaborative studies and improving research output.

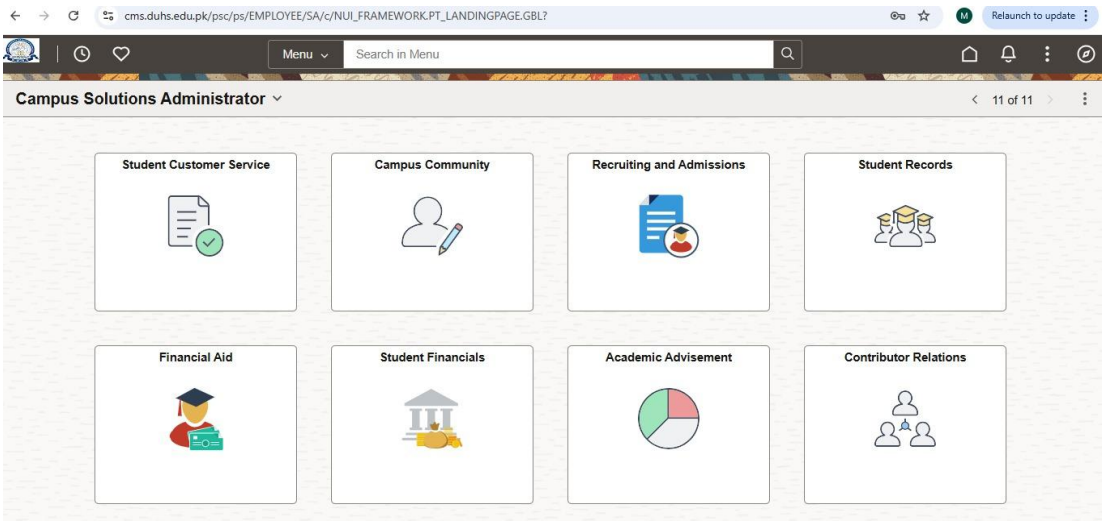
19. Mobile Apps (Dow Care / Dow Doctor) for patients and consultants (Android and iOS) to access the patient's records and history.



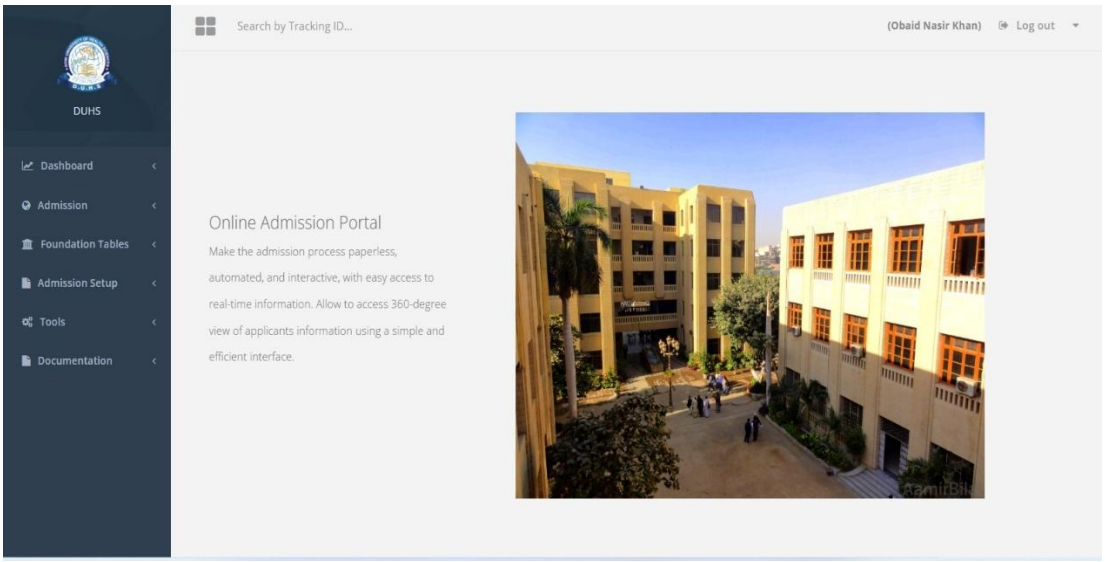


20. Online Payment Gateways (Kuickpay, Meezan, 1Bill) for fee payment, event registration fees, and application processing fees.

21. Upgraded Peoplesoft Campus Management System (CMS) completes the student life cycle, including student records, fees, financial aid, grade book, student self-service portal etc.



22. Online Admissions System with the online payment gateway.



23. Library Management System for the automation of the daily operations of the library.

- The purpose of a library management system is to manage & track the daily work of the library, such as issuing books, returning books, due calculations, etc.

24. DUHS Faculty E-Portal for PhD Supervisor Registration.

25. Dow Assessment System (DAS):

- DAS is customized in-house development for Q-Banking, Paper Generation, Online Examination, Result and Item Analysis.

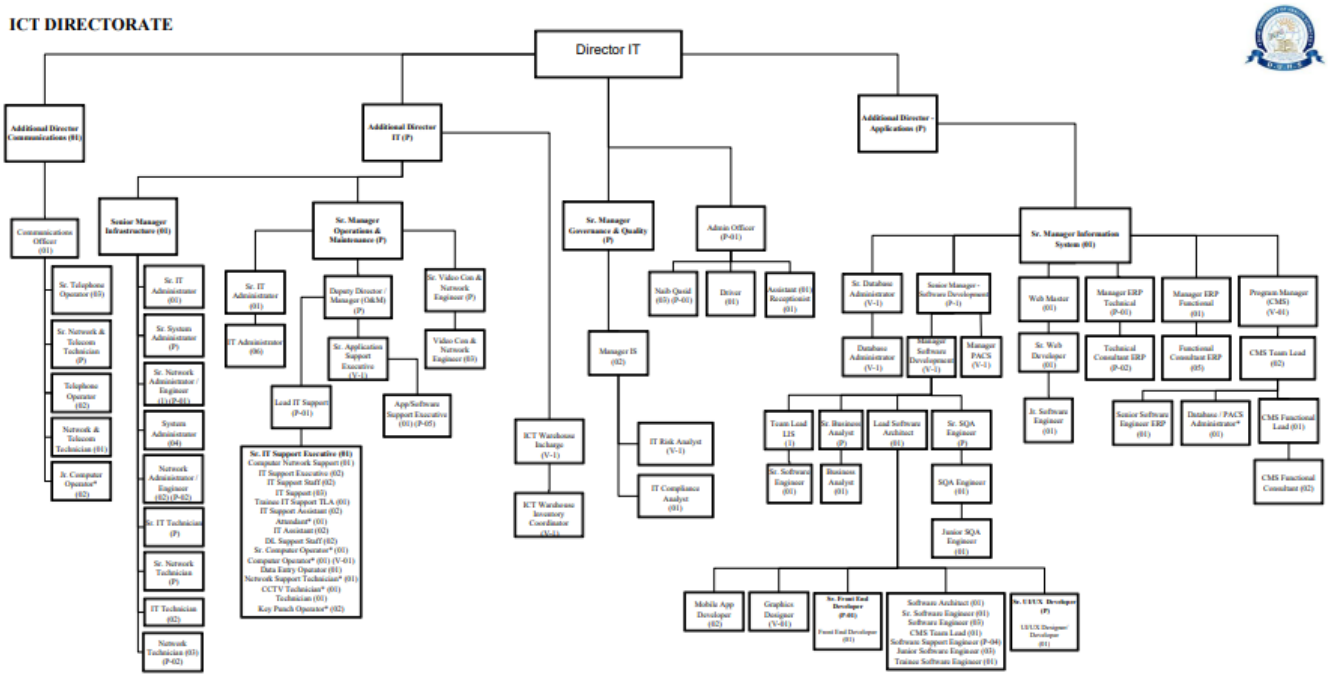
26.DUHS website

- Serves as the University's main online portal and as a central hub for academic, healthcare, and administrative information, reflecting the university's commitment to transparency, research excellence, and public service.

IMPACT:

- The updated website plays a significant role in providing essential information to students, faculty, and the general public.
- It serves as a centralized platform for accessing academic programs, healthcare services, research updates, and admissions processes.
- By offering real-time updates on admissions, research events, and diagnostic services, the website enhances transparency, improves accessibility to healthcare and education, and promotes DUHS's commitment to excellence in health sciences.
- Integrated with HMIS for OPD schedule and appointments.

ORGANOGRAM


ICT DIRECTORATE
Director IT
Additional Director Communications (01)
Additional Director IT (P)
Additional Director - Applications (P)
Communications Officer (01)
Sr. Telephone Operator (03)
Sr. Network & Telecom Technician (P)
Telephone Operator (02)
Network & Telecom Technician (01)
Jr. Computer Operator* (02)
Senior Manager Infrastructure (01)
Sr. IT Administrator (01)
Sr. System Administrator (P)
Sr. Network Administrator / Engineer (01) (P-01)
System Administrator (04)
Network Administrator / Engineer (02) (P-02)
Sr. IT Technician (P)
Sr. Network Technician (P)
IT Technician (02)
Network Technician (03) (P-02)
Sr. Manager Operations & Maintenance (P)
Sr. IT Administrator (01)
IT Administrator (06)
Deputy Director / Manager (O&M) (P)
Sr. Application Support Executive (V-1)
Lead IT Support (P-01)
Sr. IT Support Executive (01)
Computer Network Support (01)
IT Support Executive (02)
IT Support Staff (02)
IT Support (03)
Trainee IT Support TLA (01)
IT Support Assistant (02)
Attendant* (01)
IT Assistant (02)
DL Support Staff (02)
Sr. Computer Operator* (01)
Computer Operator* (01) (V-01)
Data Entry Operator (01)
Network Support Technician* (01)
CCTV Technician* (01)
Technician (01)
Key Punch Operator* (02)
Sr. Video Con & Network Engineer (P)
Video Con & Network Engineer (03)
App/Software Support Executive (01) (P-05)
Sr. Manager Governance & Quality (P)
Manager IS (02)
ICT Warehouse Incharge (V-1)
ICT Warehouse Inventory Coordinator (V-1)
IT Risk Analyst (V-1)
IT Compliance Analyst (01)
Admin Officer (P-01)
Naib Qasid (03) (P-01)
Driver (01)
Assistant (01) Receptionist (01)
Sr. Database Administrator (V-1)
Database Administrator (V-1)
Senior Manager - Software Development (P-1)
Manager Software Development (V-1)
Manager PACS (V-1)
Team Lead LIS (1)
Sr. Software Engineer (01)
Sr. Business Analyst (P)
Business Analyst (01)
Lead Software Architect (01)
Sr. SQA Engineer (P)
SQA Engineer (01)
Junior SQA Engineer (01)
Mobile App Developer (02)
Graphics Designer (V-01)
Sr. Front End Developer (P-01)
Front End Developer (01)
Software Architect (01)
Sr. Software Engineer (01)
Software Engineer (03)
CMS Team Lead (01)
Software Support Engineer (P-04)
Junior Software Engineer (03)
Trainee Software Engineer (01)
Sr. UI/UX Developer (P)
UI/UX Designer Developer (01)
Sr. Manager Information System (01)
Web Master (01)
Sr. Web Developer (01)
Jr. Software Engineer (01)
Manager ERP Technical (P-01)
Technical Consultant ERP (P-02)
Manager ERP Functional (01)
Functional Consultant ERP (05)
Program Manager (CMS) (V-01)
CMS Team Lead (02)
Senior Software Engineer ERP (01)
Database / PACS Administrator* (01)
CMS Functional Lead (01)
CMS Functional Consultant (02)

SECTION I: OVERVIEW OF THE STRATEGIC PLANNING PROCESS

The strategic planning process was developed as a structured and collaborative approach to align departmental initiatives with institutional priorities, emerging technologies, and the evolving needs of stakeholders. This process began with a comprehensive assessment of the current operational landscape, identifying strengths, weaknesses, opportunities, and potential challenges. Through internal consultations, performance data analysis, and environmental scanning, the department was able to establish a clear understanding of existing capabilities and future requirements.

Key stakeholders, including leadership, technical teams and administrative staff, were engaged throughout the planning process. Their input was gathered through surveys, workshops, and focused discussions to ensure that the strategic direction reflects both operational realities and aspirational goals. Emphasis was placed on identifying areas where technology could serve as a transformative enabler—whether by enhancing service delivery, improving security and resilience, advancing research, or streamlining internal operations.

Based on the findings, strategic objectives were defined and grouped into targeted focus areas to ensure clarity and alignment with long-term institutional vision. Each objective was developed with measurable outcomes in mind, supported by realistic timelines and resource considerations. A particular focus was placed on innovation, digital transformation, information security, and data-driven decision-making.

The planning process also incorporated a review of national and international best practices in higher education, research, healthcare IT, and enterprise systems to ensure the strategy is forward-thinking and resilient. The result is a multi-year plan that provides a roadmap for technology and service advancement, with built-in mechanisms for implementation, monitoring, and continuous improvement

ICT Strategic Planning workgroup members:

1. Shahzad Ahmed (Director IT)
2. Muhammad Danish (Senior Manager - Network and Infrastructure)
3. Moiz Uddin Noor (Manager - Information Security - Risk and Compliance)
4. Syed Arshad Ali (Manager - Information Security - Governance)
5. Muhammad Danish Khan (Senior Manager – Information Systems)
6. Abdul Basit (Lead Software Architect)
7. Adnan Yahya (Senior IT Administrator – Operation & Maintenance)
8. Shoaib Arain (Senior IT Administrator - Infrastructure)

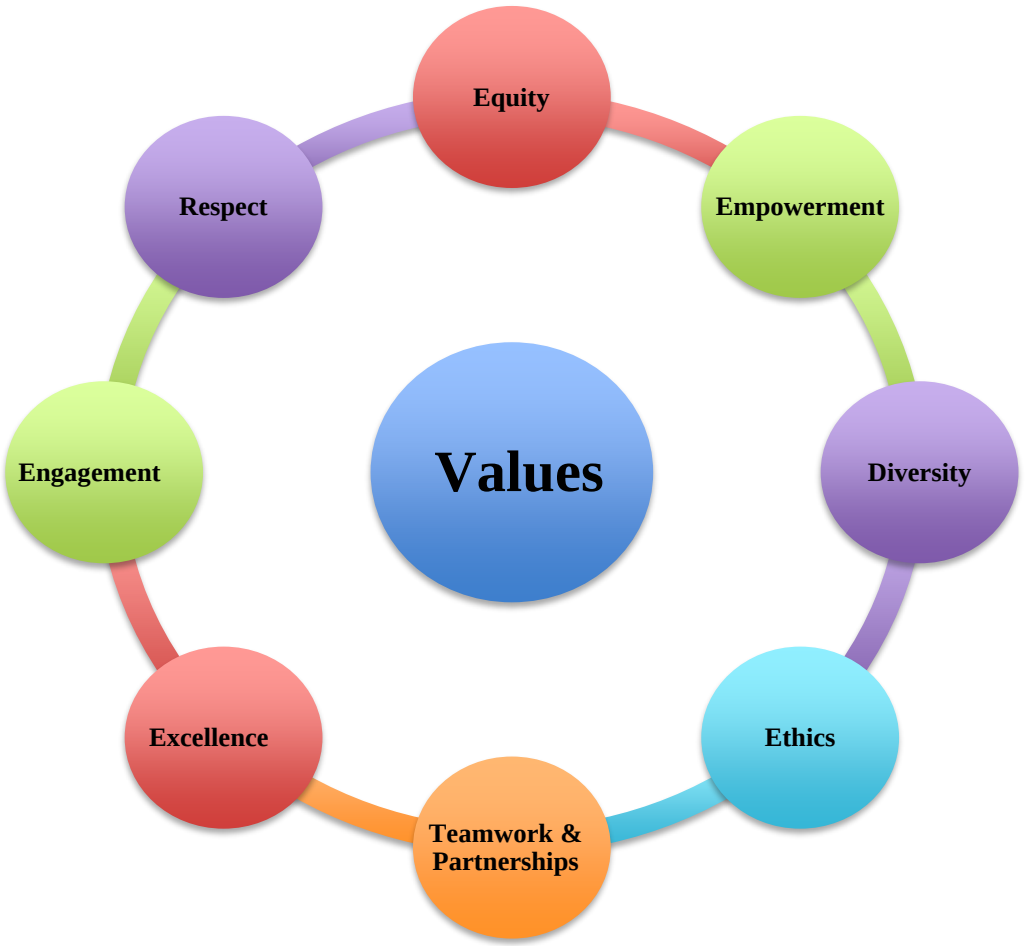
SECTION II: VISION, MISSION, & VALUES

VISION

To be a pre-eminent academic institution committed to changing and saving lives.

MISSION

Providing outstanding patient-centered education, training, and clinical care informed by cutting-edge research and innovation, generating and disseminating new knowledge.



VALUES

- Customer Service
    - Put patients first
- Empathy & Compassion
    - Understand before you judge
    - Be concerned for the sufferings and misfortunes of others

- Excellence
    - Be the best and commit to exceptional quality and service
- Innovation
    - Encourage curiosity, imagine, create, and share
- Teamwork
    - Engage and collaborate
- Integrity & Leadership
    - Be a role model and influence others to achieve their best
    - Have the courage to do the right thing
    - Hold yourself and others accountable
- Respect & Collegiality
    - Be kind
    - Listen to understand
    - Value different opinions

STATEMENT OF PURPOSE

Commits to fostering a community of inclusive excellence through strategic leadership and high-quality service through robust transformation in emerging information technologies and organizing all educational, clinical research, and healthcare services. Provides innovative and sustainable technologies through strategic partnerships and IT community engagement to advance DUHS's commitment to being pre-eminent. ICT Directorate provides outstanding support in achieving distinguished milestones in clinical research, education systems, and healthcare services.

SECTION III: ASPIRATIONAL INSTITUTIONS

AGHA KHAN UNIVERSITY HOSPITAL

The Aga Khan University (AKU) is renowned for its exceptional healthcare facilities, combining advanced medical technology, highly skilled professionals, and a commitment to compassionate care. As an inspiring institution, AKU stands out for integrating cutting-edge research, education, and clinical services, fostering innovation and excellence in healthcare. The university's hospitals and clinics are equipped with state-of-the-art facilities and are recognized for delivering high-quality care across diverse specialties, including cardiology, oncology, pediatrics, and maternal health. AKU's emphasis on patient-centered care, public health initiatives, and training healthcare leaders exemplifies its mission to improve health outcomes in communities locally and globally. Through its holistic approach to healthcare and education, AKU continues to set benchmarks for excellence and serves as a model institution in the healthcare sector.

The Aga Khan University (AKU) is an inspiring institution renowned for its world-class healthcare facilities, innovative practices, and commitment to excellence. It integrates state-of-the-art medical services, cutting-edge research, and comprehensive education to enhance health outcomes and foster the next generation of healthcare leaders.

SECTION IV: STRATEGIC GOALS

Goal 01: **Enterprise IT Transformation**

Objective 1 - Optimizing Virtualization with AI and Hybrid Cloud

Objective 2 - Strengthening IT Infrastructure with AI & ML Predictive Alerts

Goal 02: **Implementation of an Information Security Management System.**

Objective 1: Building a Robust Information Security Framework

Objective 2: Enhancing Security Controls for Cyber Threat Protection

Objective 3: Strengthening Risk Management and Business Resilience

Goal 03: **Enhance the quality and accessibility of healthcare and academic services.**

Objective: 1 In-House Software Development

Objective: 2 Increase utilization of Microsoft Dynamics 365 Finance and Operations ERP

Objective: 3 Increase utilization of PeopleSoft Campus Management Solution (CMS) ERP

Goal 04: **Improving helpdesk efficiency through inventory consolidation, AI automation, and intelligent decision-making for seamless operations.**

Objective 1: Enhance ITSM by optimizing helpdesk services, automating IT inventory with AI, and enabling intelligent decision-making.

Goal 05: **To utilize large datasets for analysis, helping researchers uncover patterns and trends, drive innovation, and advance knowledge in the research field.**

Objective 1: Harness large datasets for in-depth analysis, driving innovation, evidence-based decisions, and advancing research.

OBJECTIVES, OKRs, KPIs

Goal 01: Enterprise IT Transformation							
Goal Statement: Modernization and scalability of ICT Infrastructure.							
Objectives & Key Results (OKRs)							
Objective 1 - Optimizing Virtualization with AI and Hybrid Cloud							
Objective	**Key Results**	**KPI**	**Measurement Method**	**Target**	**Person Responsible**	**Resource Requirement**	**Timeline**
Optimize existing Virtualization by integrating Artificial Intelligence and deploy Hybrid Cloud Integration to bridge on-premises resources with the current cloud platform.	Achieving 40% of workloads migrated to a hybrid cloud environment.	Required workloads completely migrated to the hybrid cloud environment.	% of prioritized workload migrated to the Hybrid Cloud Environment	Review Achievement Yearly. 33% of Completion	Senior Manager - Information Systems and Section Head Network and Infra	Cloud Subscriptions Associated Virtualization Licenses HR - Senior System Administrators Database Administrator	Completed by 2027
	Use AI to automate 25% of resource scheduling across virtualization and hybrid cloud, improved operational efficiency.	Resource Scheduling tasks are automated by AI.	% of Resource allocation Automation tasks via AI scheduling	Review Achievement Yearly. 33% of Completion		Procurement of AI Automated Tools	
	Improve service availability to 99% for all production environments.	Tracks the service uptime across all production systems and environments.	Uptime (%) of core Production System & Environment	Review Achievement Yearly. 33% of Completion		Full Support is required from Works & Services for fulfilment of all Power & Cooling Requirements for all IT Rooms.	
Objective 2 - Strengthening IT Infrastructure with AI & ML Predictive Alerts							
Objective	**Key Results**	**KPI**	**Measurement Method**	**Target**	**Person Responsible**	**Resource Requirement**	**Timeline**
Strengthen Core IT Infrastructure; incorporating modern Artificial Intelligence & Machine Learning based predictive alerts to ensure seamless operations and resilience proactively.	Complete infrastructure upgrade for at least 50% of network and system components.	Minimum 50 percent upgradation of core IT infrastructure components (network, systems, storage, switches, wires, data centres).	Percentage of Upgraded Components.	Review Achievement Half Yearly and generate the performance graph.	Section Head Network and Infra		Completed by 2027
	Achieve a 99% uptime rate (excluding planned maintenance activities during non-peak hours) across all core ICT infrastructure.	Tracks the uptime percentage of all critical systems against a target of 99% availability.	Uptime percentage of core Production System & Environment	Review Achievement Half Yearly and generate the performance graph.		Establishment of Fully functional Primary & Backup Datacenters, comprises of all required areas & components with full redundancy.	
	Implement AI/ML-based predictive alerting systems to identify and address 80%	Potential issues detected and resolved proactively by AI/ML-based	Count the number of issues resolved	Review Achievement Half Yearly and generate the performance graph		Procurement of Firewalls	

	of potential infrastructure issues before they impact operations by the end of 2026.	predictive alerts.					
	Automate 50% of routine IT operations (patching, updates, monitoring) by the end of year 2027.	Automation Adoption Rate: Percentage of routine IT operations automated, including patch management, updates, and monitoring.	Percentage of automated IT operations.	Review Achievement Half Yearly 17% of Completion.			

Goal 02: Implementation of Information Security Management System.							
Goal Statement: To build a secure and resilient information security framework that protects critical assets, ensures compliance, and supports operational continuity.							
Objectives & Key results (OKRs)							
Objective 1 - Building a Robust Information Security Framework							
Objective	**Key Results**	**KPI**	**Measurement Method**	**Target**	**Person Responsible**	**Resource Requirement**	**Timeline**
Develop a robust and comprehensive information security framework that aligns with organizational goals and industry standards.	Development of comprehensive information security and related policies aligned with the international standard and frameworks like ISO 27001:2022.	Submission of the number of documents for the review and approval from the competent authority.	Track the number of developed policies, review feedback, and approval from the competent authority.	Approval and implementation of policies by Q3 2025	Manager Information Security	• Hiring of professional services • Hiring of GRC Analyst • Cross-Functional department cooperation	Dec -25
	Train technical staff and end-user Awareness session on the security framework and best practices.	Enhancing end-user awareness of information security standards through the number of Information Security Advisories and guidelines.	Conduct surveys before and after training to measure awareness levels. Track the number of advisories and training sessions delivered.	At least 2 awareness sessions per quarter and 10 advisories per year.			
Objective 2 - Enhancing Security Controls for Cyber Threat Protection							
Objective	**Key Results**	**KPI**	**Measurement Method**	**Target**	**Person Responsible**	**Resource Requirement**	**Timeline**
Ensure the compliance of enhanced technical and operational security controls to protect organizational assets and sensitive data against evolving cyber threats.	Ensure the effective implementation and functionality of technical controls such as firewalls, IDS/IPS, and endpoint protection across all critical systems.	Percentage of Intrusion Detection System (IDS), Intrusion Prevention System (IPS), and endpoint protection functionalities implemented.	Track implementation progress via security system reports and periodic security assessments.	100% deployment by Q3 2026.	Manager Information Security	• Hiring of professional services • Procurement of VA Tools like Nexpose or equivalent • Cross-Functional department cooperation	Dec-26
	Enforce incident response procedures is in practice.	Percentage reduction in security incidents.	Compare pre- and post-implementation incident logs to measure effectiveness.	Reduction in incidents by Q4 2026.			

	Integrate a threat intelligence platform and correlate threat data with internal logs, covering all critical assets through Cyber Command.	Number of firewalls integrated with the threat intelligence platform for logging cyber threats.	Track firewall and threat intelligence platform integration logs.	100% firewall integration with the platform by Q2 2026.			
	Increase participation rate in phishing simulation training.	Phishing simulation training participation through targeted awareness campaigns, management support, and tracking engagement via reminders and progress reports.	Analyze participation metrics and phishing susceptibility rates in simulations.	Increased user participation with reduction in phishing click rates by Q3 2026.			
	Improve threat detection, reduce incident response time, and enhance application security through proactive Vulnerability Assessment and Penetration Testing (VAPT) and Managed Detection and Response (MDR).	Effective vulnerability management, faster threat detection, minimized response time, and an improved security posture.	Measure risk scores before and after VAPT, track response time, and evaluate security posture reports.	Reduction in critical vulnerabilities and faster response time by Q4 2026.			
Objective 3 - Strengthening Risk Management and Business Resilience							
Objective	**Key Results**	**KPI**	**Measurement Method**	**Target**	**Person Responsible**	**Resource Requirement**	**Timeline**
Enhance risk management and business resilience by identify, assess and mitigate risks to critical assets through a structured risk management process.	Document all critical and non-critical assets by preparing an Asset Classification Sheet.	Percentage of documented assets	Compare the total number of assets documented against the total identified assets.	100% of all organizational assets documented by Q2 2026.	Manager Information Security	• Hiring of professional services • Procurement of risk management software like Datix or equivalent. • Cross-Functional department cooperation	Dec-27
	Conduct comprehensive risk assessments for all identified assets.	Percentage of Risk Assessment completed	Track the number of assets assessed against the total number of documented assets.	100% risk assessment coverage for all documented assets by Q3 2026.			
	Classify risks into high, medium, and low categories based on impact and likelihood.	Percentage of risks categorized	Review the risk register to ensure all identified risks are categorized.	100% of identified risks categorized by Q3 2026.			
	Develop and implement mitigation plans for all identified risks, ensuring coverage across low, medium, and high-priority risks.	Percentage of mitigated risks	Track the number of risks with implemented mitigation plans compared to total risks.	100% of all identified risks mitigated by Q4 2026.			

	Maintain a Risk Register with detailed risk entries, including description, owner, impact, likelihood, and mitigation plan.	Number of assets evaluated for risk.	Count the number of assets included in the risk register with complete risk details.	100% of critical assets evaluated and documented in the risk register by Q3 2026.			

Goal 03: Enhance the quality and accessibility of healthcare and academic services.							
Goal Statement: Enhance healthcare and academic services through integrated applications, automation, and feature expansion aligned with international standards, while leveraging artificial intelligence to improve application usability and efficiency.							
Objectives & Key results (OKRs)							
Objective - 1 In-House Software Development							
Objective	**Key Results**	**KPI**	**Measurement Method**	**Target**	**Person Responsible**	**Resource Requirement**	**Timeline**
Committed to enhance the quality and accessibility of healthcare and academic services by integrating ERP systems and hardware (such as PACS and patient monitoring equipment), developing new web modules and mobile applications, and optimizing application performance through artificial intelligence.	Application Development and Expansion: Successfully launch new Mobile applications for Patients and Doctors also web application modules within the first year to enhance healthcare and academic services.	New Mobile applications and Web application modules successfully launched.	Track the number of mobile and web modules launched. Measure user onboarding and initial usage metrics.	Q4 2025	BADA Section Head/Senior Manager - Information Systems	Dedicated Human resources required	Completed by 2027.
		Application Development for Vendor Management System of DUHS	Monitor development milestones and completion status. Measure user feedback post-launch.	Q4 2026			
	Improved Service Accessibility: Achieve a 25% increase in the accessibility of healthcare and academic services through mobile or web applications within the first six months.	Percentage increase in service accessibility (via mobile/web applications).	Compare user access data before and after deployment. Measure login frequency and duration.	Q4 2026	BADA Section Head/Senior Manager - Information Systems	N/A	Completed by 2027.
	Technology Integration: Integrate at least 2 advanced technologies (e.g., AI, cloud computing, data analytics) into existing services to improve operational efficiency and service delivery.	Number of advanced technologies integrated into the services.	Count and document new technologies implemented. Measure impact through efficiency gains.	Q4 2026	BADA Section Head/Senior Manager - Information Systems	Dedicated Human Resource required (Data Analyst)	Completed by 2027.
		Implement AI-based institutional assistant for automated responses, enterprise system connectivity	Monitor AI response effectiveness. Measure system integration success and user feedback on automation.	Q4 2027			
		New integration of LIS	Track integration status with LIS. Measure improvement in lab result processing times.	Q4 2026			

	User Adoption: Attain a 90% adoption rate of newly developed or expanded modules among healthcare and academic staff.	Percentage of healthcare and academic staff adopting new modules.	Measure module usage rate among staff. Conduct surveys on module effectiveness and adoption.	Q4 2026	BADA Section Head/Senior Manager - Information Systems	Required End user cooperation/support	Completed by 2027.
	Customer Satisfaction: Achieve an 85% satisfaction rate from users (students, healthcare patients, staff) regarding the ease of use and effectiveness of the newly implemented applications.	User satisfaction rate based on ease of use and effectiveness.	Conduct user satisfaction surveys. Track satisfaction scores quarterly.	Q4 2026	BADA Section Head/Senior Manager - Information Systems	N/A	Completed by 2027.
	Efficiency Improvement: Reduce operational inefficiencies by 30% by automating workflows and processes in healthcare and academic services through the new applications.	Percentage reduction in operational inefficiencies.	Measure time and cost savings in processes post-implementation. Track reduction in errors or delays	Q4 2026	BADA Section Head/Senior Manager - Information Systems	N/A	Completed by 2027.
	Data Security: Achieve 100% implementation of data encryption across all systems and ensure regular security audits to maintain compliance with industry standards and regulations.	Percentage of data encrypted across all systems and frequency of security audits conducted.	Measure % of encrypted systems. Track the number of security audits conducted annually.	Q4 2027	BADA Section Head/Senior Manager - Information Systems	Dedicated Human resources required: Database Administrator	
Objective 2: Increase utilization of Microsoft Dynamics 365 Finance and Operations ERP							
Objective	**Key Results**	**KPI**	**Measurement Method**	**Target**	**Person Responsible**	**Resource Requirement**	**Timeline**
Increase the utilization of Microsoft Dynamics 365 Finance and Operations ERP by enabling new modules and features	Single Sign-On (SSO) Functionality: Integrated authentication across multiple systems.	Reduction in login issues.	Percentage of login issues	2027	ERP Section Head/ Senior Manager - Information Systems/ Senior Manager - Networks & Infra	Budget required for Azure AD Subscription Hiring of Professional Services Subscription of Integration/Migration/Workflow tools	Completed by 2027
	Dynamics 365 - HR, Self-Services, User Access, Utilization, Budgeting, Sales Modules	Reduction in manual tasks to ensure financial accuracy.	Percentage of reduction in baseline manual task	2026	ERP Section Head/Senior Manager - Information Systems	Dynamic 365 cloud licensing Dedicated Human resources Required Senior Software Developer	Completed by 2026
	Upgrading the Career Portal with Admin Functionality & MS Dynamics 365 Integration	Automated shortlisting and interview scheduling.	Percentage of automated shortlisting automation rate	2026	ERP Section Head/Senior Manager - Information Systems		Completed by 2026

	Biometric Attendance System Integration with Dynamics 365	Integrated attendance records and overtime workflow.	Percentage of attendance integration rate	2026	ERP Section Head/Senior Manager - Information Systems		Completed by 2026
Objective - 3 Increase utilization of PeopleSoft Campus Management Solution (CMS) ERP							
Objective	**Key Results**	**KPI**	**Measurement Method**	**Target**	**Person Responsible**	**Resource Requirement**	**Timeline**
Increase the utilization of PeopleSoft Campus Management Solution (CMS) ERP by enabling new modules and features	Integration of PeopleSoft (CMS) Attendance with Biometric devices: Integrated attendance records between PeopleSoft CMS & Time Trax.	Accuracy of attendance logs, reduction in manual corrections.	Compare discrepancies in attendance records before and after integration. Track the number of manual corrections required before and after integration.	2025	CMS Section Head/Senior Manager - Information Systems	N/A	Completed by 2025
	OAS Integration with PeopleSoft (CMS): Automatic data transfer between OAS & CMS, improved student onboarding.	Reduction in manual data entry errors.	Track error rates in student onboarding data before and after integration. Measure time saved in student record updates.	2025	CMS Section Head/Senior Manager - Information Systems	N/A	Completed by 2025
	PeopleSoft (CMS) Graduate Research Management: Improved tracking for research approvals and monitoring.	Tracking students' thesis progress.	Monitor the number of research proposals approved and the time taken for approvals. Track student progress milestones in the system.	2025	CMS Section Head/Senior Manager - Information Systems	Budget Requirement	Completed by 2025
	PeopleSoft (CMS) Utilization and Report Development: Increased department-wise usage, new reports developed.	Number of new reports created, system usage metrics.	Track the number of reports generated per department. Measure the frequency of report usage by faculty/staff.	2025	CMS Section Head/Senior Manager - Information Systems	HR Resource Required (Technical Consultant - ERP)	Completed by 2025
	PeopleSoft (CMS) Architecture Enhancement: Optimized system performance and reduced enrollment issues.	Reduction in manual enrolment assistance.	Track system downtime and enrollment-related support requests. Measure system response times during peak enrolment periods.	2026	CMS Section Head/Senior Manager - Information Systems	Budget required for procurement of: Load Balancer Tool Performance Monitoring Tools for Stress Testing	Completed by 2026
	Integration of CMS with external Applications	Moodle, KOHA integration	Track the number of successful data exchanges between CMS and external applications. Conduct user feedback surveys on integration effectiveness.	2025	CMS Section Head/Senior Manager - Information Systems		Completed by 2025

	E-forms for digitalization of manual form submissions and approvals.	Number of forms digitized.	Track the number of manual forms replaced with e-forms. Measure processing time improvements for form approvals.	2026	CMS Section Head/Senior Manager - Information Systems	Budget Required for Secure Workflow Integration.	Completed by 2026

Goal 04: Improving helpdesk efficiency through inventory consolidation, AI automation, and intelligent decision-making for seamless operations.							
Goal Statement: Optimize IT Service Management (ITSM) by enhancing helpdesk efficiency through ICT inventory consolidation, AI-driven automation, and intelligent decision-making for seamless operations.							
Objectives & Key results (OKRs)							
Objective 1: Enhance ITSM by optimizing helpdesk services, automating IT inventory with AI, and enabling intelligent decision-making.							
Objective	**Key Results**	**KPI**	**Measurement Method**	**Target**	**Person Responsible**	**Resource Requirement**	**Timeline**
To enhance IT Service Management (ITSM) by optimizing IT helpdesk services, delivering efficient and effective IT support, and ensuring seamless operations. This will be achieved by consolidating IT inventory for improved tracking and management of IT equipment, incorporating AI-powered features for automation, and facilitating intelligent decision-making to streamline processes.	Increase IT Helpdesk Efficiency: Achieve a 30% reduction in average resolution time for IT support tickets by implementing AI-powered automation tools.	Average resolution time for IT support tickets.	Calculate average resolution time of resolved tickets	Review Achievement Half Yearly and generate the performance graph.	O&M Section Head	IT Service Management tool Service Now that integrates with AI agent to automate ticket management and resolution processes.	Completed till end of 2026.
						Tools to incorporate AI-powered automation for ticket routing and responses.	
						Tools to provide AI automation features for helpdesk tasks like ticket categorization, priority setting, and routing.	
						Robotic process automation tool that can automate repetitive IT service tasks, reducing resolution time.	

	Improve IT Inventory Management: Consolidate 100% of IT assets into a centralized inventory system for better tracking and management of IT equipment.	Percentage of IT assets consolidated in a centralized inventory system	Percentage of recorded IT assets in centralized System	Review Achievement Half Yearly and generate the performance graph.	O&M Section Head	Tool for tracking IT assets, including hardware and software inventory.	Completed by 2027.
	Enhance Self-Service Portal Usage: Reach a 50% increase in usage of the self-service portal by end users, empowering them to resolve common issues independently.	Percentage increase in self-service portal usage by end users.	Percentage of AI automated task of routine helpdesk tasks	Review Achievement Half Yearly and generate the performance graph.	O&M Section Head	Tools to allows end users to resolve issues, submit tickets, and access knowledge articles autonomously. Tool that integrates knowledge bases, ticket submission, and request management for end users. Tools that enable the creation of a self-service portal with articles, FAQs, and community forums. Tools for building custom self-service portals integrated with IT systems.	Completed by 2027.
	Automation Adoption: Automate 40% of routine IT helpdesk tasks using AI-driven features to improve response times and reduce workload on support teams.	Percentage of routine IT helpdesk tasks automated using AI-driven features.	Percentage of average resolution time of helpdesk tickets	Review Achievement Half Yearly and generate the performance graph.	O&M Section Head	Tools to automate repetitive helpdesk tasks like system updates, user creation, and common queries.	Completed by 2027.
	Improve Decision-Making: Implement AI-powered analytics tools to	Percentage improvement in the prioritization of critical IT issues.	Percentage of average response time of prioritize helpdesk tickets	Review Achievement Half Yearly and generate the	O&M Section Head	Tool for business analytics, providing AI-powered insights into IT operations to	Completed by 2027.

	improve decision-making, leading to a 20% improvement in the prioritization of critical IT issues based on impact analysis.			performance graph.		improve decision-making.	
						Tool that uses AI to analyze IT data and help prioritize incidents based on impact.	
			Percentage of critical Incidents resolved time according to SLA			Tool that can help in predicting IT trends and priorities based on historical data.	
						Tool that can integrate with various data sources to provide AI-driven insights and decision support systems for IT management.	
	Increase User Satisfaction: Achieve a 90% satisfaction rate in post-service surveys by enhancing the user experience of IT support services.	Post-service user satisfaction rate (measured through surveys).	Percentage of user satisfaction rate by feedback system	Review Achievement Half Yearly and generate the performance graph.	O&M Section Head	Tool to collect post-service satisfaction feedback from users after interactions with the IT helpdesk.	Completed by 2027.
						Tool for creating and distributing satisfaction surveys to collect feedback on IT service interactions.	
				Review Achievement Half Yearly and generate the performance graph.		Tools for capturing CSAT (Customer satisfaction score) scores from users after helpdesk interactions.	
						Tools to gather and analyze user feedback to enhance the overall satisfaction of IT support services.	

Goal 05: To utilize large datasets for analysis, helping researchers uncover patterns and trends, drive innovation, and advance knowledge in the research field.							
Goal Statement: To harness the power of large datasets for in-depth analysis, supporting researchers in uncovering patterns, trends, and relationships while driving innovation, evidence-based decision-making, and advancing the knowledge base in the research field.							
Objectives & Key Results (OKRs)							
Objective 1: Harness large datasets for in-depth analysis, driving innovation, evidence-based decisions, and advancing research.							
Objective	**Key Results**	**KPI**	**Measurement Method**	**Target**	**Person Responsible**	**Resource Requirement**	**Timeline**
Leverage the power of large datasets for in-depth analysis, revealing complex patterns, trends, and relationships within the research field. The primary goal is to support researchers in meeting complex research needs, driving innovative solutions, enabling evidence-based decision-making, and significantly advancing the knowledge base in the field.	Successful integration and utilization of large datasets for research analysis.	Number of datasets integrated and made accessible.	Track the number of datasets added to central repositories. Measure access frequency and user feedback on data availability.	Q4 2027	Database Administrator and Section Head BADA/Senior Manager - Information Systems	Establishment of a Data Warehouse Dedicated Human Resources required (Data/Research Analyst)	Completed by 2027.
	Increase in cross-disciplinary research projects leveraging shared datasets.	Number of collaborative research projects initiated due to improved data sharing and analytics capabilities.	Count the number of new joint research projects initiated post-integration. Measure the use of shared analytics tools and data platforms.	Q4 2027	Database Administrator, Section Head BADA, Data/Research Analyst & Senior Manager - Information Systems	End-user cross-functional department collaboration	Completed by 2027.
	Increase support for researchers in addressing complex research needs and driving innovations.	Percentage of researchers reporting improved access to data and tools.	Conduct periodic surveys to measure the percentage of researchers indicating enhanced data access. Track tool usage metrics.	Q4 2027	Database Administrator and Section Head BADA/Senior Manager - Information Systems	The end user research department's support is required for requirements, like fulfilment of requirements for Jupyter Notebooks, MATLAB, and IBM Watson Studio.	Completed by 2027.

SECTION V: RESOURCE PLANNING FOR ACHIEVING STRATEGIC GOALS

Achieving the department's strategic objectives requires a thoughtful and integrated approach to resource planning. Human resources are at the core of this effort, with specialized roles needed in areas such as artificial intelligence, cybersecurity, software engineering, ERP systems, data science, and IT service management. Where necessary, personnel will be recruited or upskilled to support evolving technologies and the growing complexity of operations. Cross-functional teams will be formed to promote collaboration across academic, research, and administrative units, ensuring that expertise is shared and aligned with institutional needs.

In terms of technology, investments will be made in infrastructure that supports digital transformation, automation, and intelligent service delivery. This includes cloud platforms, cybersecurity solutions, AI-powered analytics tools, ERP systems, and integrated IT management platforms. The department will also ensure its IT environment supports high-performance computing, large-scale data processing, and seamless service integration. Consolidating inventory and streamlining operational assets will further support efficiency and scalability.

Financial resources will be allocated strategically to ensure funding is available for essential initiatives, including infrastructure upgrades, licensing, development tools, and research platforms. Cost-benefit analysis will be used to prioritize investments, while opportunities for external funding, including grants, will be explored to support innovation and academic research.

Training and development will be a continuous process, equipping staff with the necessary skills to navigate emerging technologies and platforms. This will include targeted workshops, role-specific certifications, and ongoing learning opportunities in key areas such as data literacy, system integration, cybersecurity, and advanced ERP utilization. Operationally, the department will maintain a support environment that enables smooth deployment, testing, and scaling of new systems, ensuring the necessary facilities and infrastructure are in place to support growth and innovation.

SECTION VI: IMPLEMENTATION AND MONITORING OF STRATEGIC PLAN

The department will follow a structured, results-oriented approach to implementing and monitoring its strategic plan. A leadership team or designated steering committee will oversee execution, ensuring accountability, resource alignment, and effective coordination across all initiatives. Implementation will follow a phased roadmap with clearly defined milestones, timelines, and deliverables to ensure steady progress and timely delivery.

Each initiative will have a responsible owner who will guide execution and monitor resource deployment. Project management practices will be applied to manage scope, timelines, risks, and stakeholder engagement effectively. Progress will be tracked using defined performance metrics and key performance indicators (KPIs), enabling the department to evaluate the impact of its efforts. Metrics may include service uptime, system performance, user satisfaction, adoption rates, and research outcomes derived from data utilization.

Monitoring and evaluation will occur on a regular basis, with quarterly progress reviews and annual strategic evaluations. These reviews will provide opportunities to assess performance, address challenges, and adjust course as needed. Digital dashboards and reporting tools will offer real-time visibility into project status and operational efficiency.

Risk management will be embedded into the implementation process through proactive identification of risks and the development of mitigation strategies. Regular assessments will be conducted to evaluate vulnerabilities, especially in areas related to cybersecurity and system reliability. Contingency plans will be maintained to ensure continuity of operations during unexpected events.

Finally, stakeholder engagement will be prioritized throughout the implementation process. Open lines of communication with faculty, researchers, technical staff, and administrative units will foster transparency, build trust, and encourage feedback. Regular updates, briefings, and collaborative sessions will ensure that all parties remain aligned with the department's strategic direction and are informed of progress toward shared objectives.

SECTION VII: LIST OF APPENDICES

No.	DESCRIPTION
A	SWOT ANALYSIS
B	TOWS MATRIX

APPENDIX A: SWOT ANALYSIS

STRENGTHS	WEAKNESSES
1. Diversified Integrated Applications portfolio. 2. Huge Data and inclusive access to information. 3. Increased automation is leading to digitalization and high productivity. 4. Integrated state-of-the-art Campus Management Solution ERP for faculty, students, and staff.	1. Skilled employee retention. 2. Lack of ICT governance (policies & procedures) 3. Insufficient disaster recovery arrangements. 4. Absence of operational empowerment
OPPORTUNITIES	**THREATS**
1. Thoroughly high-tech digital transformation. 2. Expeditious technology trend and market developments. 3. Use of data analytics for healthcare research and education learning system. 4. Telemedicine	1. Lack of skilled human resources. 2. Cybersecurity incidents threat. 3. High-Cost Infrastructure 4. Lack of IT contribution recognition

APPENDIX B: TOWS MATRIX

	OPPORTUNITIES	THREATS
	1. Thoroughly high-tech digital transformation. 2. Expeditious technology trends and market developments. 3. Use of data analytics for healthcare research and education learning system. 4. Telemedicine	1. Lack of skilled human resources. 2. Cybersecurity incidents threat. 3. High-Cost Infrastructure 4. Lack of IT contribution recognition
STRENGTHS	**SO**	**ST**
1. Diversified Integrated Applications portfolio. 2. Huge Data and inclusive access to information. 3. Increased automation is leading to digitalization and high productivity. 4. Integrated state-of-the-art Campus Management Solution ERP for faculty, students, and staff.	1. Leverage the Diversified Integrated Applications portfolio to capitalize on the high-tech digital transformation trend. 2. Utilize Huge Data and inclusive access to information for data analytics in healthcare research and education learning systems. 3. Exploit increased automation to enhance productivity in the rapidly evolving technology market. 4. Use the Integrated Campus Management Solution ERP to align with the expeditious technology trend in educational management.	1. Address the Skilled employee retention issue to overcome the Lack of skilled human resources. 2. Strengthen cybersecurity measures to address the threat of cybersecurity incidents. 3. Explore cost-effective alternatives to address the challenge of High-Cost infrastructure. 4. Gain active support and encouragement from senior leadership for recognizing the importance of IT contributions. 5. Executive endorsement and visibility of IT initiatives significantly enhance their perceived value and importance within the organization.

WEAKNESSES	WO	WT
1. Skilled employee retention. 2. Lack of ICT governance (policies & procedures) 3. Insufficient disaster recovery arrangements. 4. Absence of operational empowerment	1. Address Skilled employee retention by linking training and career development opportunities to the high-tech digital transformation initiative. 2. Develop and implement ICT governance policies and procedures to align with the technology trend and market developments. 3. Establish disaster recovery arrangements as part of the digital transformation initiative. 4. Introduce operational empowerment initiatives to complement opportunities in the healthcare research and education learning system.	1. Mitigate the Lack of ICT governance by integrating it into disaster recovery arrangements and overall risk management. 2. Address the Insufficient disaster recovery arrangements by incorporating cybersecurity measures and protocols. 3. Counter the threat of high-cost infrastructure by exploring innovative and cost-effective solutions. 4. Tackle the Absence of operational empowerment by aligning it with strategies to retain skilled employees.