Information System Strategic Planning to Improve UINSU Medan Service Performance

M. Ridwan[1]*, Saparuddin Siregar[2],
[1,2]Sharia Economics, Faculty of Economics and Business, Universitas Islam Negeri Sumatera Utara, Medan, Indonesia
[1]mridwanku@uinsu.ac.id, [2]saparuddinsiregar@uinsu.ac.id

Abstract: Facing increasingly rapid technological developments, UINSU Medan's efforts must be supported by developing existing information systems to meet the needs of the community and community. Currently, even though it has implemented an Information System in its activities, UINSU Medan does not yet have an Information System plan for the next 5 (five) years (2023-2027). It is hoped that this SI strategic planning will be able to improve the performance of UINSU services related to the Tri Dharma of Higher Education. The method used in this research is a qualitative survey. Data collection was carried out by observation, interviews, and literature review. The research informants are the managers of the UINSU Information Technology and Database Center (PUSTIPADA), and employees involved in the Information Systems section as well as service users such as students and lecturers. The stages of this research use Anita Cassidy's approach which consists of the visioning phase, analysis phase, direction phase, and recommendation phase. The data obtained was then analyzed using Value Chain analysis, SWOT, Porte's Five Forces, and other supports which were then confirmed by Focus Group Discussion with competent parties. This research recommends an Information Systems roadmap for UINSU Medan consisting of 34 integrated applications to be developed within 5 (five) years from 2023-2027.

Keywords: Strategic Planning, Value Chain, Anita Cassidy, SWOT, Porter's Five Forces.

INTRODUCTION

The rapid development of information technology requires all institutions to carry out rapid digital transformation, including the State Islamic University (UIN) of North Sumatra, Medan. As one of the Islamic Universities in Indonesia, UINSU Medan must be able to carry out this transformation and align its Human Resources (HR) with its information technology(Harahap, 2023). This effort is also in line with the desire of the leadership of UINSU Medan to make the university a Smart Islamic University which seeks to integrate information technology to support the academic services provided(Azhar & Sikumbang, 2018). This effort requires a mature information system strategy. This strategy is expected to be able to answer the challenges of the times so that the policies implemented are right on target and precisely calculated. Information system strategic planning will provide an overview of how to approach planning information technology information systems strategically at UINSU Medan. Strategic planning is very important from various aspects, including Business Strategy, Global Technical Development(Bryson et al., 2018), Application and Infrastructure Needs, Human Resources, Finance, and others(Rachinger et al., 2019). Strategic planning must be able to provide a migration path that can overcome existing weaknesses, exploit strengths, and generate new needs.

Based on the above, this research was conducted to formulate optimal information system strategic planning at UINSU Medan which aims to improve the performance of campus services for the better(Irfan et al., 2018). This research will also formulate information system strategy recommendations consisting of recommendations for business application architecture(Puspita et al., 2019), information technology infrastructure, adjustments to the organizational structure and roadmap in accordance with the strategy to be implemented. It is hoped that the results of this research can help UINSU and similar educational institutions in improving university performance through optimizing information system strategic planning.

In formulating an Information Systems strategic plan(Puspita et al., 2019), several methods are used, for example Ward and Peppard(Agnes & Wijaya, 2021), Price Water House, Zachman(Rachmi Azanisa Putri et al., 2023), Anita Cassidy(Dharmayanti & Suryani, 2019), and Togaf. Several previous studies such as Ward and Peppard Model Analysis on Business Strategy and Information Systems Strategic Planning conducted at Al-Washliyah Muslim Nusantara University(Parinduri et al., 2021), Information Systems Strategic Planning Using the Anita Cassidy Method, Information Systems Strategic Planning Using the Anita Cassidy Method (Case Study: Cipeujeh Diesel Cirebon)(Aryanto, 2022)(Z.Sandra, E.Darwiyanto, 2020), Application of the Ward and Peppard - Cassidy Method in Information Systems Strategic Planning Assyifa Sukabumi Islamic Hospital(Firmansah et al., 2021), Information System Strategic Planning to Improve Education Services Using the Ward and Peppard Method(Vicarya Widagdo et al., 2018) and Information Systems Strategic Planning at Private Universities in Yogyakarta(Sutanto, 2021). This research will result in the need for an Information System that is in line with UINSU Medan's business strategy, has integrated applications to support UINSU Medan's performance, and has a UINSU IS roadmap for the next five years.

LITERATURE REVIEW

The method used in this research is a qualitative survey. The research location is the North Sumatra State Islamic University, Medan. Data collection was carried out by observation and interviews. The informants for this research are the managers of the UINSU Information Technology Center and Database, and employees involved in the Information Systems section as well as service users such as students and lecturers. The stages of this research used the Anita Cassidy method which consisted of the visioning phase, analysis phase, direction phase, and recommendation phase which was carried out at UINSU Medan. The data obtained was then analyzed using Value Chain, SWOT and other supporting analysis which was then confirmed by a Focus Group Discussion with competent parties. The final step in this research stage is the preparation of an information system plan, and recommendations for the UINSU Medan Information System roadmap for five years. Anita Cassidy's method can be described as follows:

a. Vision Determination Phase (Visioning Phase)
   - Initiate and implement projects.
   - Understand the situation and vision of UINSU Medan.
   - Document analysis and business confirmation.
b. Analysis Phase (Analysis Phase)
   - Understanding the Information system situation
   - Analyze the Information System situation.
   - Build recommendations and alternative solutions.
c. Direction Phase
   - Building an Information system Vision and Direction
   - Identify information system projects.
d. Recommendation Phase (Recommendation Phase)
   - Develop a roadmap.
   - Develop a business plan.
   - Communicate plans.

*name of corresponding author

METHOD

Vision Determination Phase (Visioning Phase)

This phase will use supporting devices (tools) to obtain information on UINSU's condition which includes vision, mission, and business scope. The tools used are Value Chain analysis and Porter's Five Forces.

UINSU Medan's vision is to become a center for knowledge integration (wahdatul 'ulum), community empowerment, and religious moderation.

Organizing integral learning by implementing the integration of knowledge (wahdatul 'ulum) so that it can produce ulul albab, scholars who are scholars, to become national cadres who apply their knowledge for the progress of Indonesia and humanity.

Orienting all scientific development towards maximizing Indonesia's role in civilization development as a logical continuation of North Sumatra as the 'zero point' of civilization built by people in Southeast Asia through the establishment of institutional and facultative centers of excellence.

Making religious moderation the basis for the attitude of the entire Academic Community so that Islamic knowledge and its application brings goodness to all (rahmatan lil'alamin) which is reflected in a modern campus with Islamic services (Islamic hospitality).

Improving the welfare of all University lecturers and employees by increasing the grade of remuneration by empowering and strengthening the Public Service Agency through business ventures and waqf schemes in addition to student participation which continues to increase; And

Continuously strive for complete learning facilities and infrastructure that are increasingly digitally oriented, research that is utilized for Indonesian and regional development, as well as community service that empowers and fosters Indonesian insight and local wisdom.
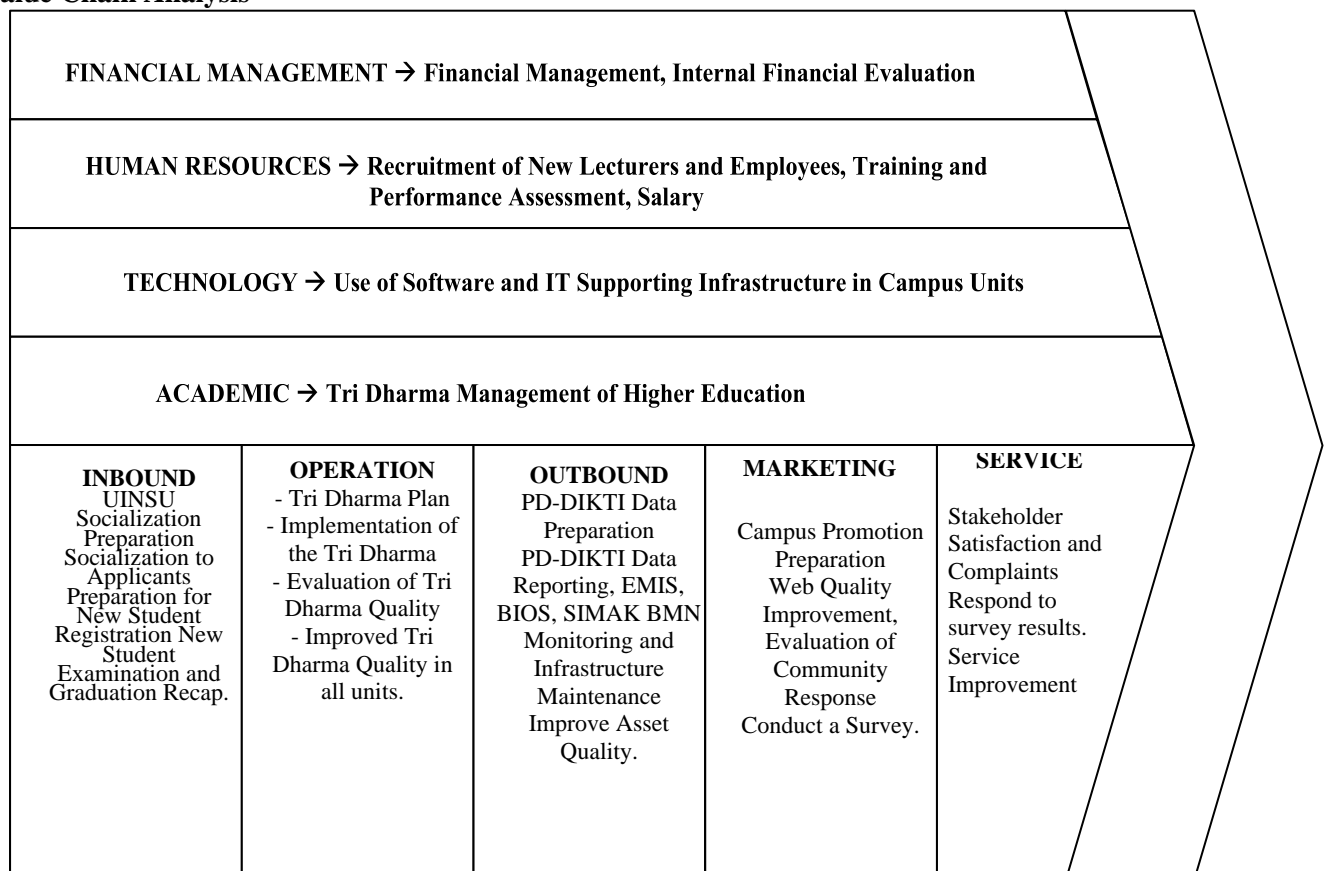
Value Chain Analysis

Figure 1. UINSU Medan Value Chain

The following is an explanation of the Value Chain above:

*name of corresponding author

Table 1: Main Activities of UINSU Medan Value Chain

No	Activity	Relevant part	Information
1	Preparation of Campus Socialization Materials	Academic	Preparation of Campus Socialization Materials
2	Outreach for UINSU Applicants	Academic	Outreach for UINSU Applicants
3	Preparation for New Student Registration	Academic	Preparation for New Student Registration
4	Exam and Graduation Recap	Finance	Exam and Graduation Recap
5	Tri Dharma Plan	Faculty/Prodi	Tri Dharma Plan
6	Tri Dharma Process	Faculty/Prodi	Tri Dharma Process
7	Tri Dharma Quality	Quality Assurance Agency	Tri Dharma Quality
8	Tri Dharma Quality Improvement in all units	All Units	Carry out Tri Dharma Quality Improvements in all units
9	PDDIKTi Data Preparation	Academics and Study Programs	PDDIKTi Data Preparation
10	PDDIKTI, EMIS, BIOS, SIMAK BMN, KEPEG reporting	Academic, Study Program, Finance, General, PUSIPADA	PDDIKTI, EMIS, BIOS, SIMAK BMN, KEPEG reporting
11	Infrastructure Monitoring and Maintenance	General Affair	Infrastructure Monitoring and Maintenance
12	Campus Promotion Preparation	Public Relations	Provide content
13	Improving Web Quality	Humas dan unit	Increase quantity and quality
14	Evaluating Community Response	All Units	Responding to society
15	Conduct a Survey	All Units	Conduct surveys
16	Stakeholder Satisfaction and Complaints	All Units	Collect survey results
17	Responding to Survey Results	All Units	Respond to survey results
18	Service Improvement	All Units	Analyzing community needs

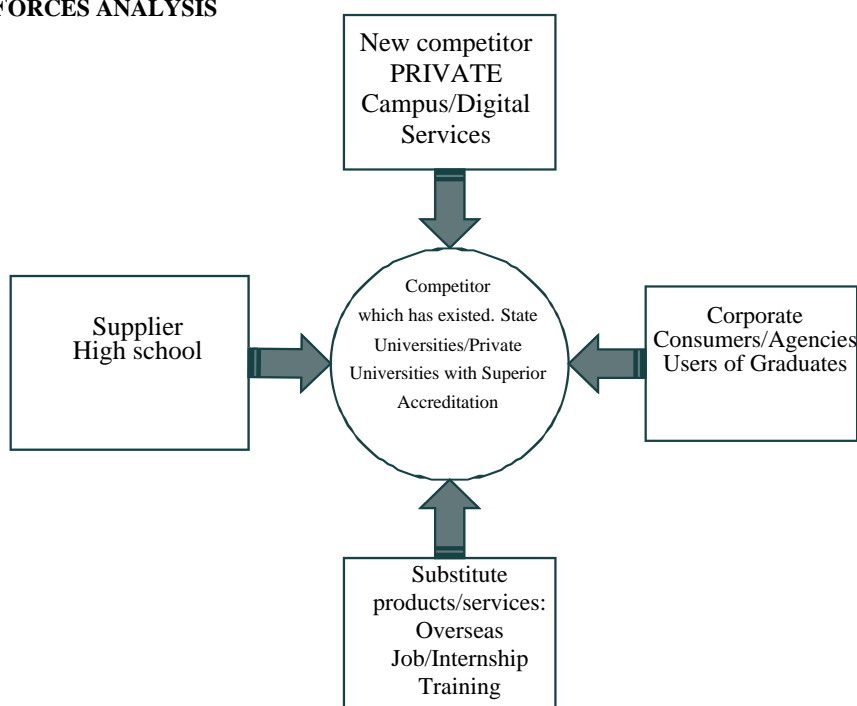*name of corresponding author

PORTER'S FIVE FORCES ANALYSIS

Figure 2. Porter's Five Forces UINSU Medan

The following is an explanation from the Porter's Five Forces analyst above:

Existing competitors are state universities that have been around for a long time. New competitors are the emergence of digital-based education phenomena and educational institutions founded by industry. Replacement products/services are work-oriented training. Customers are graduate users such as companies or government institutions. Suppliers are providers of new students, namely graduates from general and Aliyah secondary schools.

SWOT Analysis

Table 2. SWOT Analysis of UINSU Medan

	Strength	*Weakness*
INTERNAL **EKSTERNAL**	- Has 5 (location) campuses - Integration Curriculum (wahdatul 'Ulum) - The presence of ASEAN Students - Financial Management with BLU (Public Service Agency) Status	- The distribution of foreign students is still small. - There are still study programs with "Good" status. - No study program has received international accreditation yet. - IT human resources are still few.
Opportunities	**S-O Strategis**	**W-O strategis**
- The position of UIN SU Medan which is on the axis of Indonesia, Malaysia and Thailand Golden Triangle (IMT-GT); - Increasing functional partnerships between UIN	- Improve services for foreign students. - Improve services and collaboration with alumni and users. - Developing appropriate research based on	- Improve the study program's accreditation status to become superior. - Prepare the study program to obtain international

*name of corresponding author

SU Medan and various other institutions, both academic, government and professional. - Development of Information Technology and Artificial Intelligence - Increasing need for research in the Islamic field with an interdisciplinary and transdisciplinary approach;	scientific integration. - Developing various applications that utilize artificial intelligence	accreditation status. - Developing the IT organizational structure and increasing the number of IT personnel - Synergizing AI with UINSU Medan service work
Threats	**S-T Strategis**	**W-T strategis**
- The presence of foreign universities offering short-term programs to meet the local job market. - Data Security Threats on the Internet World. - AI technology that shifts the role of humans in several fields. - The ever-increasing demands for research standardization and scientific publications result in the need for adaptation programs;	- The presence of foreign universities offering short-term programs to meet the local job market. - Security Threats Data in the Internet World; - AI technology that shifts the role of humans in several fields. - The ever-increasing demands for research standardization and scientific publications result in the need for adaptation programs;	- Carrying out student and lecturer exchanges both within and outside the country - Develop integrative research that shows UINSU's uniqueness in answering community problems. - Improving the quality of UINSU Medan's human resources, especially in the digital field.

Strategic Alignment Model Analysis

Table 3. Strategic Alignment Model Analysis

Business Strategy	*IS Strategy*
Business Scope: Increasing promotions in each unit to socialize UINSU	*Technology Scope*: Developing content on the website
Socialization of UINSU's advantages to schools	Develop mobile applications
Improve financial management	Develop financial applications
Improving the quality of the Tri Dharma of Higher Education	Developing academic applications, research and community service
Developing an information system to support Quality Assurance	Building Quality Assurance applications
Distinctive Competencies: Integration of Islamic science into the curriculum	*System Competencies:* Application Integration
Establish collaboration with external parties	Information systems can be used to increase cooperation by developing application platforms that can be accessed by the public
Business Governance: Ensure campus assets are properly recorded	*IT Governance*: Provide information regarding the condition of the assets owned
Ensure lecturers and staff have increased performance	Information Systems develop HR applications that are integrated with other systems such as finance, personnel and external applications.

*name of corresponding author

RESULT

From the results of the analysis carried out, several applications will be determined that are needed by UINSU Medan in the next five years.

Table 4. Proposed UINSU Medan Application from the results of the analysis carried out.

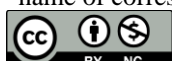| Proposed Information System Solution	Information
Learning Manajemen System (LMS)	Learning Management Systems (LMS) are designed to assist in the management, administration, delivery and reporting of online learning.
SI Mobile Campus	The Campus Mobile Information System (SI) is a mobile-based application developed specifically for the needs of students, staff and lecturers in the campus environment. This application provides various features and functions that facilitate daily activities in the campus environment, facilitate access to information, and increase administrative efficiency.
Manajemen Basis Data	Information Systems (IS) Database Management is software designed to manage databases that store, organize and access information.
Network Security	Information Systems (IS) Network Security is a set of tools, policies and procedures designed to protect computer networks and information systems from threats, attacks and intrusions.
Asset Inventory Management	Asset Inventory Management Information Systems (IS) are software designed to help organizations manage and track their physical assets, including equipment, computer hardware, vehicles, property, and other valuables.
Financial Management	Financial Management Information System (SI) is software designed to assist organizations in managing, monitoring and making decisions related to financial aspects.
Lecture Scheduling Management	Lecture Scheduling Management Information System (SI) is software designed to assist universities in managing, planning and compiling lecture schedules.
Electronic Mail	Electronic Mail Information System (SI) is software that facilitates sending, receiving, storing and managing electronic mail or email.
Absence	Attendance Information System (SI) is software used to manage and monitor employee attendance.
Classroom Management	Classroom Management Information System (SI) is software designed to assist universities in managing and scheduling classrooms.
Research and Community Service	The Research and Community Service Information System (SI) is software that helps educational and research institutions in managing, monitoring and documenting research and community service activities.
Parking	Parking Information System (SI) is software used to manage and supervise parking facilities, monitor parking space usage, and provide more efficient services to parking users at UINSU Medan.
Alumni and Careers	Alumni and Career Information System (SI) is software used by educational institutions or organizations to manage relationships with alumni and assist graduates in finding career opportunities.

Employee Recruitment	Employee Recruitment Information System (SI) is software used by organizations to manage the entire recruitment and hiring process for new employees.
Campus Health Services	Health Services Information System (SI) is software used in managing and providing health services on campus.
Student and Lecturer Exchange	The Student and Lecturer Exchange Information System (SI) is software used by educational institutions to manage and facilitate student and lecturer exchange programs with universities or other educational institutions.
Guidance Counseling	Student Counseling Guidance Information System (SI) is software used by educational institutions to manage and facilitate guidance and counseling services for students.
Cooperation	University Collaboration Information System (SI) is software used by higher education institutions to manage and facilitate collaboration with other universities, both domestic and foreign.
International Services	Campus International Services Information System (SI) is software used by educational institutions, especially colleges and universities, to manage all aspects of international services related to students, staff, research and cross-border activities within the campus environment.
Language Services	Campus Language Center Services Information System (SI) is software used by educational institutions to manage and facilitate language-related services, including language courses, language proficiency tests, as well as support for students who want to improve language skills.
Business Management	Campus Business Management Information System (SI) is software used by educational institutions to manage various operational and administrative aspects of campus business activities.
Intern	Student Internship Information System (SI) is software used by educational institutions and companies to manage and facilitate internship programs for students.
Maintenance	Campus Equipment Maintenance Information System (SI) is software used by campuses to manage and facilitate the care and maintenance of IT equipment, machines and other campus facilities.
Employee Performance	Campus Employee Performance Information System (SI) is software used by educational institutions to manage, monitor and facilitate the performance of campus employees and staff.
Quality Assurance	Campus Internal Quality Assurance Information System (SI) is software used by educational institutions to manage, monitor and improve the quality of education, services and processes on campus.
Accreditation	Study Program Accreditation Information System (SI) is software used by educational institutions to monitor, manage and facilitate the accreditation process for the study programs offered.
Chatbot Service	Service's Chatbot Information System (SI) helps academics with general questions, the registration process, class schedules, and others. In the process, the Chatbot will use Artificial Intelligence.
Campus Website	The Campus Website is an official website owned by the campus, which is used to provide important information to students, prospective students, staff and the general public.
Mahad	Mahad Information System (SI) is software used by campuses to manage campus dormitory operations and administration.
External Service	The External Service Information System (SI) for Campus Employees is software used by campuses to manage, monitor and facilitate tasks carried out by campus employees outside campus or in the field.

*name of corresponding author

SI E-Voting	Student Organization E-Voting Information System (SI) is software used by student organizations to hold elections or voting electronically.
Social Funds	The Campus Social Fund Information System (SI) is software used by campuses to manage, track and allocate social funds and financial assistance to those in need.
Graduation	Student Graduation Information System (SI) is software used by educational institutions to organize and manage the graduation process, including registering graduation participants, managing graduation events, and sending graduation documents.
Achievement	Student Achievement Information System (SI) is software used by campuses to manage, track and honor achievements, awards and accomplishments obtained by students during their studies.

DISCUSSIONS

The proposed application was then analyzed using the McFarlan Grid and the following results were obtained:

Table 5. McFarlan Quadrant

Strategic	High Potential
IS Guidance Counseling IS Maintenance IS Social Funds IS Alumni and Careers IS Language Services IS Graduation IS Intern IS Internal Quality Assurance IS Campus Business Management IS International Services	IS E-Voting IS Parking IS Electronic Mail IS Mahad
Learning Management System (LMS) IS Database Management IS Lecturer and Student Exchange Campus Website IS Mobile Campus IS Student Party IS Lecture Scheduling Management IS Classroom Management IS Research and Community Service IS Accreditation	IS Chatbot Services IS Absence IS Employee Recruitment IS Health Services IS Cooperation IS External Service IS Employee Performance IS Financial Management IS Asset Inventory Management IS Network Security
Key Operational	Support

From the results of the analysis and discussion of the system offered, a structure is needed to manage the Information Technology Center and Data Base as follows:
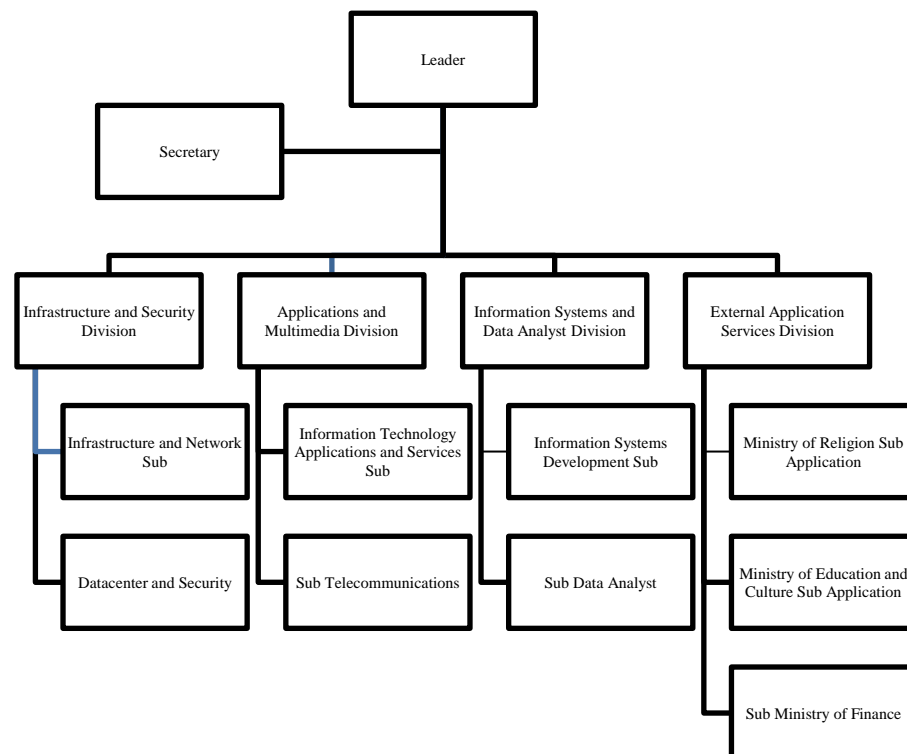
Figure 3. Proposed Information Technology Center and Database Structure

To implement the proposed system, a roadmap is needed for the next five years by considering various factors at UINSU Medan, such as resources, funds and time. The roadmap can be seen in the table below:

Table 6. Annual Information System Projects

No	Information System Project Name	2023	2024	2025	2026	2027
1.	Learning Manajemen System (LMS)	■				
2.	Mobile Campus		■	■		
3.	Database Management		■	■		
4.	Network Security	■	■			
5.	Asset Inventory Management		■	■		
6.	Financial Management	■	■			
7.	Lecture Scheduling Management	■	■			
8.	Electronic Mail		■			
9.	Absence	■				
10.	Classroom Management			■	■	
11.	Research and Community Service	■				
12.	Parking				■	
13.	Alumni and Careers		■			
14.	Employee Recruitment		■			
15.	Health Services		■	■		
16.	Student and Lecturer Exchange			■	■	
17	Guidance Counseling				■	■
18	Cooperation	■	■			
19	International Services		■	■		

*name of corresponding author

20	Language Services
21	Campus Business Management
22	Intern
23	Maintenance
24	Employee Performance
25	Internal Quality Assurance
26	Accreditation
27	Chatbot Services
28	Campus Website
29	Mahad
30	External Service
31	E-Voting
32	Social Funds
33	Graduation
34	Student Achievement

CONCLUSION

The results of strategic planning research on UINSU MEDAN information systems and technology produced technological infrastructure architectural solutions that will be used to implement 34 Information System solutions and produce a new PUSTIPADA structure which will later implement 34 IS solutions that are in line with UINSU Medan's vision. The continuation of the strategic planning document for the UINSU Medan system is to make information technology governance improve UINSU Medan's risk management. Apart from that, it is recommended to UINSU management to carry out projects that have been planned with the application design which is the IS solution in this research.

REFERENCES

Agnes, A., & Wijaya, A. F. (2021). Information System Strategic Planning Using Ward and Peppard Framework At the Regional Secretariat of Bengkayang Regency, the Organization Section. *Sebatik*, *25*(1), 131–137. https://doi.org/10.46984/sebatik.v25i1.1283

Aryanto, J. (2022). Perencanaan Strategis Sistem Informasi Menggunakan Metode Anita Cassidy (Studi Kasus: Cipeujeh Diesel Cirebon). *JATISI (Jurnal Teknik Informatika Dan Sistem Informasi)*, *9*(3), 1811–1823. https://doi.org/10.35957/jatisi.v9i3.2138

Azhar, A. A., & Sikumbang, A. T. (2018). Students' Trends in Islamic Communication Postgraduate in 2010-2016 State Islamic University of North Sumatera (UINSU). *Budapest International Research and Critics Institute (BIRCI-Journal): Humanities and Social Sciences*, *1*(4), 206–214. https://doi.org/10.33258/birci.v1i4.110

Bryson, J. M., Edwards, L. H., & Van Slyke, D. M. (2018). Getting strategic about strategic planning research. *Public Management Review*, *20*(3), 317–339. https://doi.org/10.1080/14719037.2017.1285111

Dharmayanti, N. L. S., & Suryani, E. (2019). Strategic Planning for System and Information Technology Using Anita Cassidy in PT. XYZ. *IPTEK Journal of Proceedings Series*, *0*(5), 559. https://doi.org/10.12962/j23546026.y2019i5.6431

Firmansah, D. A., Rohman, R. S., & Ermawati, E. (2021). Penerapan Metode Ward and Peppard - Cassidy Pada Perencanaan Strategis Sistem Informasi Rumah Sakit Islam Assyifa Sukabumi. *Simpatik: Jurnal Sistem Informasi Dan Informatika*, *1*(1), 43–52. https://doi.org/10.31294/simpatik.v1i1.407

Harahap, F. H. (2023). Four Characters of UINSU Medan Students and Graduates. *International Seminar and Conference on Islamic Studies*, *2*(October), 15–23.

Irfan, M., Putra, S. J., Alam, C. N., Subiyakto, A., & Wahana, A. (2018). Readiness factors for information system strategic planning among universities in developing countries: A systematic review. *Journal of Physics: Conference Series*, *978*(1). https://doi.org/10.1088/1742-

*name of corresponding author

6596/978/1/012046

Parinduri, D. A., Roslina, R., & Situmorang, Z. (2021). Analisis Ward and Peppard Model Pada Strategi Bisnis dan Perencanaan Strategis Sistem Informasi. *Jurnal Media Informatika Budidarma*, *5*(2), 717. https://doi.org/10.30865/mib.v5i2.2977

Puspita, M. I., Ranggadara, I., & Prihandi, I. (2019). Framework zachman for design information system logistics management. *International Journal of Recent Technology and Engineering*, *8*(3), 4030–4034. https://doi.org/10.35940/ijrte.C5377.098319

Rachinger, M., Rauter, R., Müller, C., Vorraber, W., & Schirgi, E. (2019). Digitalization and its influence on business model innovation. *Journal of Manufacturing Technology Management*, *30*(8), 1143–1160. https://doi.org/10.1108/JMTM-01-2018-0020

Rachmi Azanisa Putri, Panca Hadi Putra, & Ryan Randy Suryono. (2023). The Integrated Information System Implementation Strategy in Korlantas Polri Based on the Zachman Framework Approach. *Jurnal RESTI (Rekayasa Sistem Dan Teknologi Informasi)*, *7*(2), 381–388. https://doi.org/10.29207/resti.v7i2.4842

Sutanto, N. H. (2021). Perencanaan Strategis Sistem Informasi pada Perguruan Tinggi Swasta di Yogyakarta (Studi Kasus Universitas ABC). *Respati*, *16*(1), 9. https://doi.org/10.35842/jtir.v16i1.383

Vicarya Widagdo, S., Kamisutara, M., Prastiwi, & Alamsah. (2018). Perencanaan Strategis Sistem Informasi Untuk Meningkatkan Layanan Pendidikan Menggunakan Metode Ward And Peppard (Studi Kasus : SMK Swasta di Surabaya). *Seminar Nasional Aplikasi Teknologi Informasi (SNATi)*, 11–2018.

Z.Sandra, E.Darwiyanto, D. D. (2020). Perencanaan Strategis Sistem Informasi Menggunakan Metode Anita Cassidy (Studi Kasus: PT Medion Farma Jaya). *E-Proceeding of Engineering*, *7*(3), 9974–9984. https://libraryeproceeding.telkomuniversity.ac.id/index.php/engineering/article/view/1778