THE EFFECT OF ENTERPRISE RESOURCE PLANNING (ERP) SYSTEMS ON ADMINISTRATIVE EFFICIENCY IN UNIVERSITIES

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Annotatsiya: Oliy ta’lim muassasalarida boshqaruv jarayonlarining tobora murakkablashib borishi korxona resurslarini rejalashtirish (ERP) tizimlarini universitet resurslari va ma’muriy ish jarayonlarini boshqarishning kompleks raqamli vositasi sifatida joriy etishga turtki bermoqda. ERP tizimlari moliya, inson resurslari, talabalar bilan ishlash, akademik boshqaruv va qaror qabul qilishni qo‘llab-quvvatlash funksiyalarini yagona platformaga integratsiya qilib, tashkiliy muvofiqlashtirish va samaradorlikni oshirishga xizmat qiladi. Dunyo bo‘ylab universitetlarda ERP tizimlarini joriy etishga katta mablag‘lar yo‘naltirilayotganiga qaramay, ayniqsa rivojlanayotgan oliy ta’lim tizimlarida ularning ma’muriy samaradorlikka ta’siri bo‘yicha empirik tadqiqotlar yetarli emas. Mazkur tadqiqot universitet boshqaruvida samaradorlik va natijadorlikni oshirishdagi muammolarni hisobga olgan holda ERP tizimlarining ma’muriy samaradorlikka ta’sirini o‘rganadi hamda ushbu bog‘liqlikni empirik jihatdan tekshirish uchun ilmiy model taklif etadi.
Kalit so‘zlar: ERP tizimlari, ma’muriy samaradorlik, oliy ta’lim boshqaruvi, raqamli transformatsiya, universitet boshqaruvi, axborot tizimlari.
Abstract: The growing complexity of higher education administration has fueled the shift towards Enterprise Resource Planning (ERP) as a comprehensive digital tool for managing a college's resources and administrative workflows. ERP systems help to streamline the management of finance, human resources, student affairs, academic administration, and decision support functions into a single platform, leading to better organisational coordination and efficiency. In spite of the massive amount of investments in the implementation of ERP systems in universities all over the world, there are limited empirical findings available about the impact of ERP on administrative efficiency, especially in developing higher education systems.
Keywords: Enterprise Resource Planning, Administrative Efficiency, Higher Education Management, Digital Transformation, University Governance, Information Systems
Абстрактный: Возрастающая сложность управления высшими учебными заведениями способствует внедрению систем планирования ресурсов предприятия (ERP) в качестве комплексного цифрового инструмента для управления ресурсами и административными процессами университетов. ERP-системы позволяют интегрировать финансовое управление, управление человеческими ресурсами, работу со студентами, академическое администрирование и функции поддержки принятия решений в единую платформу, что способствует повышению организационной координации и эффективности. Несмотря на значительные инвестиции в внедрение ERP-систем в университетах по всему миру, эмпирических исследований их влияния на административную эффективность, особенно в развивающихся системах высшего образования, остается недостаточно.
Ключевые слова: ERP-системы, административная эффективность, управление высшим образованием, цифровая трансформация, университетское управление, информационные системы.

Introduction (Kirish/Введение).

Digital technologies have revolutionised organisational management practises in the public and private sectors all around the world. The administration of higher education institutions is increasingly complex, requiring them to have to deal with a variety of administrative processes that involve student services, academic administration, human resource management, financial management, research activities, and reporting to institutions. With the growth of universities in size and complexity, coordinating and making decisions can be inefficient and ineffective using traditional administrative systems.

Enterprise Resource Planning (ERP) systems have become all-encompassing technological solutions aimed at connecting organizational processes via a single information platform. ERP systems allow for the integration of various functional areas within an institution through a common database and standardized processes, which can help to streamline the movement of information and enhance overall organizational efficiency (Davenport, 1998). ERP systems eliminate data duplication, improve information reliability, and allow for instant access to key institutional data.

ERP systems are being widely used in higher education institutions. Erp solutions are used by universities to handle various tasks related to students, such as enrollment, educational records, financial management, procurement, HR, payroll, and strategic planning. This integration will help administrators track institutional performance better and help in decision making based on evidence.

Administrative efficiency is a key measure of institutional efficiency. Efficient administration helps ensure better service delivery, maximum utilization of resources, lower operational costs, and higher satisfaction of stakeholders. Robbins and Coulter (2022) said that organizational efficiency is the effectiveness of using resources to achieve desired outcomes without waste.

The national strategy for the modernization of Uzbekistan has made digital transformation of higher education as a strategic priority. The electronic management system, digital governance mechanisms, and integrated information platforms signify the government's dedication to enhancing institutional performance via technology. Yet, there is little research that looked at the role ERP plays in administrative efficiency in Universities.

The purpose of this study is to explore how ERP system affects the efficiency of administration in Higher Education Institutions and to create a framework for empirical analysis. The aim of the study is to answer the following research question:

How do ERP systems influence administrative efficiency in universities?

Literature review (Mavzuga oid adabiyotlar tahlili/Обзор литературы).

The implementation of Enterprise Resource Planning (ERP) systems has become a strategic priority for higher education institutions seeking to improve administrative efficiency, data integration, and decision-making processes. ERP systems consolidate various organizational functions such as finance, human resources, student management, procurement, and academic administration into a unified digital platform, thereby reducing operational redundancy and enhancing institutional performance [1].

Recent studies indicate that ERP adoption significantly improves administrative effectiveness by automating routine processes and facilitating real-time access to institutional data. According to Alsharari (2022), ERP systems contribute to better resource utilization, faster service delivery, and enhanced organizational transparency in universities [2]. Similarly, digital transformation initiatives supported by ERP technologies have been linked to increased operational agility and reduced administrative costs [3].

Research also highlights the importance of ERP systems in supporting evidence-based decision-making. Integrated databases enable university administrators to access accurate and timely information, improving planning, budgeting, and performance monitoring activities [4]. Furthermore, cloud-based ERP solutions provide scalability and flexibility, allowing universities to manage growing data volumes and user demands more effectively [5].

Several scholars emphasize that ERP implementation positively influences stakeholder satisfaction. Students benefit from streamlined registration, examination, and academic record services, while faculty and staff experience improved workflow coordination and communication [6]. ERP-enabled automation reduces paperwork and minimizes human errors, leading to greater service quality and operational efficiency [7].

Despite these benefits, ERP implementation in universities faces several challenges. High implementation costs, resistance to organizational change, insufficient user training, and data migration issues remain significant barriers to successful adoption [8]. Therefore, effective change management strategies, leadership commitment, and continuous staff development are essential factors for maximizing ERP benefits [9].

Overall, the literature suggests that ERP systems play a crucial role in enhancing administrative efficiency within higher education institutions by improving process integration, information management, decision-making quality, and stakeholder services. However, successful implementation depends on technological readiness, organizational support, and user acceptance.

Methods (Tadqiqotni amalga oshirishda foydalanilgan usullar/ Методы).

The quantitative approach of this study is a cross-sectional survey to analyze the impact of ERP (Enterprise Resource Planning) system on the administrative efficiency in Higher Education Institutions. There are times when quantitative methods will be appropriate, as they enable the researcher to measure relationships between variables and use statistical procedures to test the theoretical hypotheses.

The study uses a main analytical method which is PLS-SEM (Partial Least Squares Structural Equation Modeling). The use of PLS-SEM in information systems, management and higher education research has been broad because it allows for the study of complex relationships between multiple latent variables and the ability to handle relatively small samples and non-normal data distributions (Hair et al., 2022).

This proposed research framework examines the relationship between ERP system characteristics, organizational coordination as mediators, and administrative efficiency, both directly and indirectly.

Population and Sample

The target group is university administrators and staff members who are frequently using ERP systems in their work. The respondents should have enough knowledge about information systems and administration of the institution.

Potential respondents include:

- Rectors and Vice-Rectors;
- Deans and Vice-Deans;
- Heads of Schools; and
- Academic Affairs Officers;
- Human Resource Managers;
- Financial Managers;
- Information Technology Specialists;
- Administrative Personnel.

A purposive sampling technique is suggested to ensure the participants have first hand experience of the use of ERP systems.

For multiple constructs and structural relationships, Hair et al. (2022) suggest that a sample size of at least 250-300 respondents is adequate for PLS-SEM analysis. Thus the sample for the study is proposed to be 300 respondents of the public and private higher education institutions in Uzbekistan.

Table 1

Proposed Sample Distribution

Position	Number of Respondents
Senior Administrators	40
Deans and Vice-Deans	60
Department Heads	80
Academic Affairs Staff	50
HR and Finance Managers	30
IT Specialists	40
Total	300

Data Collection Instrument

A structured questionnaire is proposed as the primary data collection instrument. The questionnaire consists of six sections corresponding to the study constructs.

All items are measured using a five-point Likert scale:

1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree

ERP System Integration (ESI)

ESI1: ERP modules are fully integrated across university departments.

ESI2: Information can be accessed from multiple functional areas through a single platform.

ESI3: ERP systems reduce duplication of information.

ESI4: System integration improves institutional coordination.

Information Quality (IQ)

IQ1: ERP-generated information is accurate.
IQ2: Information is timely and up-to-date.
IQ3: Reports generated by ERP systems are reliable.
IQ4: Information supports administrative decision-making.

Process Automation (PA)

PA1: ERP systems automate routine administrative processes.
PA2: Administrative tasks require less manual intervention.
PA3: Workflow automation improves productivity.
PA4: Processing times have decreased since ERP implementation.

User Satisfaction (US)

US1: Users are satisfied with ERP system functionality.
US2: ERP systems are easy to use.
US3: ERP systems improve job performance.
US4: Training programs adequately support ERP usage.

Organizational Coordination (OC)

OC1: Communication among departments has improved.
OC2: Information sharing has become more effective.
OC3: Interdepartmental collaboration has increased.
OC4: Organizational coordination has improved.

Administrative Efficiency (AE)

AE1: Administrative processes are completed more quickly.
AE2: Operational costs have decreased.
AE3: Service quality has improved.
AE4: Resource utilization has become more effective.
AE5: Overall administrative performance has improved.

Analysis and rezults (Tahlil va natijalarlar /Анализ и результаты).

Data Analysis Procedures

Data analysis will be conducted using SmartPLS 4 software.

The analysis consists of two stages:

Measurement Model Assessment

The reliability and validity of the measurement model will be evaluated through the following indicators.

Reliability Analysis

- Cronbach's Alpha (>0.70)
- Composite Reliability (CR >0.70)

Convergent Validity

- Factor Loadings (>0.70)
- Average Variance Extracted (AVE >0.50)

Discriminant Validity

- Fornell-Larcker Criterion
- Heterotrait-Monotrait Ratio (HTMT <0.90)

Successful achievement of these thresholds indicates that the measurement model demonstrates acceptable reliability and validity.

Structural Model Assessment

The structural model will be assessed using:

- Path Coefficients (β)
- T-values
- P-values
- Coefficient of Determination (R^2)
- Effect Size (f^2)
- Predictive Relevance (Q^2)

Bootstrapping with 5,000 subsamples will be employed to test the statistical significance of hypothesized relationships.

Expected Results and Discussion

Considering the findings from the literature review, it can be expected that ERP System Integration will have a positive effect on Organizational Coordination. Those universities that use integrated ERP systems are likely to benefit from greater communication, better information sharing, and less administrative fragmentation.

Organizational Coordination and Administrative Efficiency are also anticipated to be major impacts of Information Quality. Good and timely information helps an administrator to make informed decisions and respond more appropriately to institutional issues.

Process Automation is expected to be one of the best indicators of Administrative Efficiency. The automation of tasks cuts down on manual efforts, error and speeds up administrative processes. As a result, universities can increase their productivity and deliver better service.

User Satisfaction is supposed to be a positive factor affecting the effectiveness of ERP. Employees who believe that ERP systems will be beneficial and easy to use are more likely to use them effectively, thus enhancing organizational benefits.

The mediation role of Organizational Coordination is likely to be significant. Without ERP systems, efficiency improvements cannot happen unless there is better coordination between organizational units. Communication and collaboration are likely to be the mechanisms by which ERP systems will help to enhance the performance of institutions.

The expected findings resonate with the Information Systems Success Theory, which highlights system quality, user satisfaction, and the impact of these factors on organizational outcomes (DeLone & McLean, 2003). Likewise, it is contended by Resource Based Theory that ERP systems can be strategic assets of the organization if implemented properly and well used (Barney, 1991).

In Higher Education Institutions in Uzbekistan ERP systems are supposed to help in the following aspects:

- Greater administrative transparency;
- Improved resource allocation;
- Faster decision-making processes;
- Enhanced institutional accountability;

Improved service to students and staff.

The results are in line with the national priorities of digital transformation and modernization of higher education governance.

Practical Implications

The study offers some useful implications for university leaders and policy makers.

First, comprehensive ERP integration in the finance, human resources, student affairs and academic administration of higher education institutions should be considered a priority. Potential organizational benefits may be restricted with partial implementation.

Second, universities need to provide staff training programmes to enhance users' acceptance and system usage. Human factors continue to be among the key factors influencing ERP success.

Third, institution leaders should create data governance policies for the quality and reliability of information.

Fourth, there is a need to facilitate the creation of digital management systems integrating different platforms to facilitate evidence-based decision-making and accountability of institutions.

Last but not least, universities should routinely assess the performance of their ERP using metrics in key administrative efficiency to get the best return on their technology investment.

Conclusion and Recommendations (Xulosa va takliflar/Выводы и предложения).

ERPs are a crucial part of the technology infrastructure in contemporary higher education institutions. By combining finance, HR, student affairs, and academic administration, ERP systems offer universities a chance to enhance organizational coordination and administrative efficiency.

Based on this study, a research framework to examine the effect of ERP System Integration, Information Quality, Process Automation, and User Satisfaction on Administrative Efficiency with Organizational Coordination as a mediator has been developed.

The proposed framework adds to existing literature about digital transformation and university governance by identifying the means of generating organizational value with the use of ERP systems. The results will help higher education administrators and policy makers to create effective digital transformation strategies.

Empirical research is recommended in future that should gather data from HIs and validate the proposed model using PLS-SEM technique. This study would offer valuable inputs on the effectiveness of ERP implementation in the context of modernization of higher education institutions.

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