International Science Journal of Engineering & Agriculture
2025; 4(2): 215-225
https://isg-journal.com/isjea
doi: 10.46299/j.isjea.20250402.14
ISSN: 2720-6319

INTERNATIONAL SCIENCE GROUP

IT infrastructure management in educational institutions using the ITIL framework

Otari Machaladze
Faculty of Informatics, Georgian Technical University, Tbilisi, Georgia
ORCID 0009-0000-2602-3647

To cite this article:
Machaladze Otari. IT infrastructure management in educational institutions using the ITIL framework. International Science Journal of Engineering & Agriculture. Vol. 4, No. 2, 2025, pp. 215-225. doi: 10.46299/j.isjea.20250402.14.
Received: 03 10, 2025; **Accepted**: 03 31 , 2025; **Published**: 04 01, 2025

Abstract: The effective management of IT infrastructure in educational institutions is critical for supporting seamless academic and administrative operations in an increasingly digital environment. Universities and colleges face challenges such as frequent IT service disruptions, inefficient incident management, and the lack of standardized service delivery processes. This paper explores the application of the Information Technology Infrastructure Library (ITIL) framework as a structured approach to IT Service Management (ITSM) within higher education institutions. By analyzing existing incidents, service requests, and operational inefficiencies, the study identifies key areas where ITIL principles can improve service efficiency, reduce system downtime, and enhance overall user satisfaction among students, faculty, and staff.The research employs qualitative methodologies, including focus groups and structured interviews with IT administrators, academic personnel, and students, to assess IT infrastructure challenges and service management needs. Additionally, the study investigates the impact of modern ITSM tools, such as Jira Service Management, in automating service workflows, tracking incidents, and improving resolution times. A comparative analysis of IT service performance before and after ITIL implementation highlights significant improvements in response efficiency, proactive monitoring, and structured service request handling. Findings indicate that adopting ITIL-based service management practices leads to enhanced IT operations through improved resource allocation, automated incident tracking, and data-driven decision-making. Standardizing workflows and implementing proactive IT monitoring strategies enable universities to mitigate recurring technical issues and optimize IT support services. The study concludes with recommendations for the effective adoption of ITIL frameworks in higher education institutions, emphasizing the long-term benefits of IT governance, continuous service improvement, and user-centric IT service delivery.

Keywords: IT infrastructure, ITIL, IT service management, Incident management, Service requests, Higher education, IT governance.

1. Introduction

The rapid advancement of digital technologies has significantly transformed the operational landscape of educational institutions. Universities and colleges increasingly rely on robust IT infrastructure to support not only academic activities but also administrative functions, research initiatives, and student engagement. As digital transformation accelerates, the expectations for seamless IT service delivery continue to rise, making efficient IT infrastructure management a critical factor in the overall success of educational institutions. However, maintaining a well-functioning IT

ecosystem presents numerous challenges, including the growing complexity of IT environments, rising security concerns, and the need for continuous system upgrades.

The effective management of IT infrastructure in universities is essential for ensuring a stable and secure environment that supports diverse stakeholders, including students, faculty, researchers, and administrative staff. Without a well-structured approach to IT service management, institutions often struggle with inefficiencies such as prolonged system downtimes, unresolved technical issues, and a lack of coordination among IT support teams. These inefficiencies not only disrupt the academic experience but also hinder research productivity and administrative efficiency. Additionally, the absence of a standardized IT management framework can lead to inconsistent service delivery, redundant workloads, and increased operational costs.

To address these challenges, IT Service Management (ITSM) frameworks such as the Information Technology Infrastructure Library (ITIL) have been widely adopted across industries, including the education sector. ITIL provides a structured approach to managing IT services, focusing on efficiency, incident resolution, service automation, and continuous improvement. By implementing ITIL principles, universities can optimize their IT operations, enhance service delivery, and ensure a stable and responsive IT environment. ITIL's emphasis on service lifecycle management and best practices enables institutions to proactively monitor their IT infrastructure, anticipate potential issues, and implement preventive measures, thereby reducing downtime and improving overall system reliability.

One of the primary concerns in university IT operations is the inefficiency of traditional incident management processes. Many institutions still rely on manual tracking of service requests, leading to delays in resolution, lack of transparency, and difficulties in prioritizing critical incidents. In the absence of automation and structured workflows, IT teams often struggle to handle large volumes of service requests efficiently. Additionally, many universities lack a centralized service desk system, making it difficult for students and staff to report issues and track their resolution status. These gaps highlight the need for an integrated IT service management approach that ensures timely responses, streamlined communication, and efficient resource allocation.

This paper aims to explore how ITIL-based IT infrastructure management can improve service delivery in educational institutions. The study investigates current challenges in university IT operations, including inefficient incident tracking, lack of automation, delayed service responses, and the absence of a structured service desk system. Additionally, it evaluates the role of modern ITSM tools, such as Jira Service Management (JSM), in streamlining IT service requests, incident resolution, and proactive monitoring. JSM, an ITIL-aligned service management tool, offers a comprehensive solution for universities seeking to enhance their IT operations through automation, self-service capabilities, and real-time reporting.

To gain deeper insights into these challenges and potential solutions, this research employs qualitative methods, including focus groups and structured interviews, to gather perspectives from IT staff, faculty, and students. The study analyzes real-world incidents and service requests within university IT departments to identify recurring issues and areas for improvement. By leveraging ITIL-based methodologies and integrating modern ITSM tools, universities can establish a more efficient and resilient IT environment that meets the evolving needs of their stakeholders.

The findings of this research contribute to the broader discussion on IT governance in higher education, demonstrating how structured ITSM approaches can lead to improved operational efficiency, reduced downtime, and enhanced user satisfaction. The paper concludes with recommendations on best practices for adopting ITIL-based IT service management in universities, ensuring a seamless IT infrastructure that supports academic excellence and institutional growth. Ultimately, by implementing a standardized and proactive IT management framework, educational institutions can enhance their ability to deliver high-quality digital services while fostering an innovative and technology-driven learning environment.

2. Object and subject of research

The object of this research is the IT infrastructure management processes in educational institutions, particularly universities and colleges. IT infrastructure in such institutions encompasses a wide range of components, including hardware (servers, computers, networking devices, and storage systems), software applications (learning management systems, academic databases, and administrative tools), cloud computing resources, cybersecurity frameworks, and IT support services. These elements collectively support academic instruction, research activities, administrative functions, and student engagement. Given the increasing reliance on digital platforms and online learning, managing IT infrastructure efficiently has become a strategic priority for higher education institutions.

In modern higher education, IT services play a fundamental role in supporting various academic and administrative operations. Learning management systems (LMS) facilitate virtual classrooms, student portals provide access to educational resources, research databases enable scholarly work, and communication platforms ensure collaboration between faculty and students. Furthermore, administrative workflows, such as student enrollment, grading systems, and financial transactions, are heavily dependent on a well-functioning IT infrastructure. However, despite its significance, IT service management in many universities faces several challenges, including frequent technical failures, slow incident resolution, lack of automation, and inefficient resource allocation. These challenges often result in service disruptions, reduced productivity, and dissatisfaction among students and faculty members.

To address these concerns, this study focuses on IT infrastructure management strategies that minimize downtime, ensure proactive issue resolution, and enhance service delivery. The research investigates how IT teams within universities can transition from reactive IT support models to proactive and automated service management approaches. By optimizing IT service workflows, educational institutions can improve system reliability, reduce operational inefficiencies, and create a seamless digital learning and administrative environment.

The subject of this research is the application of the ITIL framework and IT Service Management (ITSM) tools in the context of higher education IT infrastructure management. ITIL (Information Technology Infrastructure Library) is a globally recognized framework that offers best practices for IT service management, focusing on efficiency, service quality, and continuous improvement. The study explores how ITIL-based methodologies can be effectively integrated into university IT departments to enhance incident management, service request handling, problem resolution, and IT asset management.

A key focus of the research is the role of modern ITSM tools, such as Jira Service Management (JSM), in streamlining IT support operations. These tools provide essential functionalities such as automated service workflows, real-time incident tracking, integration with knowledge bases, and data-driven reporting. By leveraging ITSM solutions, universities can centralize IT service operations, ensure faster response times, and improve communication between IT teams and end users. This research examines real-world IT incidents, service request patterns, and operational bottlenecks in university IT departments to identify best practices for IT service optimization.

Moreover, the study extends its analysis to the broader implications of structured IT governance in digital transformation efforts within higher education. As universities increasingly adopt hybrid and online learning models, ensuring a robust and scalable IT infrastructure has become a necessity. The research highlights how ITIL-aligned service management approaches contribute to digital resilience, data security, and user-centric IT support services. By improving IT service transparency and accountability, institutions can enhance student and faculty satisfaction, drive digital innovation, and achieve long-term operational efficiency.

Ultimately, this research aims to provide practical recommendations for universities looking to refine their IT service strategies through ITIL-based methodologies and modern ITSM tools. The findings contribute to the ongoing discourse on digital transformation in education, demonstrating

how structured IT management can create a more efficient, responsive, and technology-driven learning environment.

3. Target of research

The primary target of this research is to explore and analyze the effectiveness of ITIL-based IT infrastructure management in educational institutions, specifically universities and colleges. As digital transformation reshapes the academic landscape, IT service management plays a crucial role in ensuring the seamless operation of educational services. Universities rely on IT systems to support online learning, administrative processes, faculty collaboration, and research activities. However, many institutions struggle with inefficiencies in IT service delivery, slow incident resolution, and a lack of structured service management frameworks. This research aims to address these challenges by investigating the practical application of ITIL best practices in higher education IT infrastructure management.

The study focuses on the following key objectives:

- **Enhance IT Service Efficiency** – Investigate how ITIL frameworks can optimize IT service delivery, improve response times, and reduce downtime in educational institutions. The research examines how structured service workflows and automation can eliminate delays in IT support, enabling universities to provide uninterrupted academic and administrative services. By aligning IT operations with ITIL principles, institutions can create a streamlined and responsive IT service environment.
- **Improve Incident and Service Request Management** – Assess how structured IT service management processes can help universities effectively track, prioritize, and resolve IT incidents and service requests using ITSM tools such as Jira Service Management (JSM). Many universities face recurring IT issues due to a lack of systematic incident tracking and resolution strategies. This research explores how implementing ITIL-based service desks can ensure faster response times, reduce service disruptions, and enhance the overall efficiency of IT departments.
- **Ensure IT Infrastructure Stability** – Evaluate the role of ITIL principles in maintaining stable, secure, and scalable IT infrastructure, which supports academic and administrative functions in higher education. Universities require a reliable IT environment to facilitate data management, online learning platforms, research collaborations, and student services. This study investigates how ITIL-aligned processes can enhance system reliability, reduce technical failures, and ensure long-term IT infrastructure sustainability.
- **Increase User Satisfaction** – Examine how ITIL-based IT service management can enhance the experience of students, faculty, and administrative staff by providing reliable, user-friendly IT support services. The research explores how IT service transparency, self-service portals, and proactive support strategies contribute to higher user satisfaction and engagement. By focusing on user-centric IT service management, institutions can create a more efficient and accessible IT support system.
- **Implement Proactive IT Management** – Explore how automation, monitoring, and preventive maintenance strategies based on ITIL principles can reduce recurring IT issues and improve overall system reliability. Traditional IT support models in universities are often reactive, addressing issues only after they arise. This study highlights the benefits of transitioning to proactive IT management, where predictive analytics, automated incident detection, and preventive maintenance minimize disruptions and improve service continuity.
- **Provide Practical Recommendations** – Develop actionable recommendations for educational institutions on how to effectively implement ITIL-based IT service management to ensure continuous improvement, cost efficiency, and high-quality IT support services. The research aims to create a roadmap for universities looking to modernize their IT operations, incorporating best practices for IT governance, service automation, and performance monitoring.

The research ultimately aims to contribute to modernizing IT service management in universities, ensuring that IT departments transition from reactive troubleshooting to proactive service optimization. By adopting ITIL-based frameworks and ITSM tools, educational institutions can enhance operational efficiency, strengthen IT governance, and support a seamless educational environment. The findings will serve as a valuable resource for IT administrators, decision-makers, and policymakers in higher education, guiding them toward implementing structured, scalable, and user-centric IT service management solutions.

4. Literature analysis

The management of IT infrastructure in educational institutions has been widely studied, with a focus on frameworks that enhance IT service efficiency, stability, and user satisfaction. As universities and colleges become increasingly reliant on digital technologies, IT service management (ITSM) frameworks such as ITIL (Information Technology Infrastructure Library) have gained prominence as structured approaches to ensuring efficient and standardized IT service delivery. This section examines key studies, frameworks, and technologies related to IT infrastructure management, ITSM, and digital transformation in education.

The role of IT infrastructure in universities is critical as it supports academic activities, research, and administrative operations. According to IBM (2022), IT infrastructure consists of hardware, networks, data storage, cloud systems, and IT support services, all of which require structured management for efficiency, security, and sustainability. In modern educational environments, IT services facilitate online learning platforms, digital libraries, research databases, and communication tools, making them essential for the institution's overall functionality. However, universities often struggle with service downtime, inefficient incident resolution, and a lack of automation, leading to disruptions in academic and administrative workflows.

A study by Surguladze & Urushadze (2014) highlights that without a well-defined IT management framework, educational institutions face recurring IT service failures, poor user experiences, and increased operational costs. The study emphasizes the need for structured service management practices, particularly ITIL-based methodologies, to enhance operational efficiency. ITIL provides a comprehensive set of best practices designed to align IT services with business needs, focusing on service strategy, design, transition, operation, and continuous improvement. By implementing ITIL-based service management, universities can systematically address IT-related challenges and improve the quality of service delivery.

Axelos (2019), the official publisher of ITIL, states that ITIL frameworks enable organizations to implement proactive IT service management strategies, reducing incidents and optimizing resource utilization. The adoption of ITIL principles in universities can lead to a more structured approach to incident and request management, ensuring that technical issues are resolved in a timely manner. Furthermore, ITIL's emphasis on continuous improvement allows institutions to refine their IT processes over time, adapting to evolving technological demands and user expectations.

In addition to ITIL, various ITSM tools have been developed to streamline IT service management in educational institutions. Atlassian (2022) identifies Jira Service Management (JSM) as one of the leading ITSM tools that fully supports ITIL practices. JSM offers automated workflows, real-time incident tracking, and knowledge base integration, enabling IT teams to manage service requests and incidents more effectively. Research by Atlassian (2021) suggests that ITSM tools like JSM significantly improve IT support efficiency by providing centralized dashboards, service analytics, and automation features that enhance response times and problem resolution.

Digital transformation in higher education has further accelerated the need for robust IT infrastructure management. A report by IBM (2022) indicates that cloud-based IT infrastructure solutions are becoming increasingly popular in universities due to their scalability, cost efficiency, and remote accessibility. Cloud computing allows institutions to manage IT services more flexibly, reducing dependency on physical infrastructure and enabling real-time collaboration between

students, faculty, and administrative staff. However, the transition to cloud-based services also introduces new challenges related to data security, compliance, and service integration, all of which necessitate structured IT management strategies.

Moreover, the importance of proactive IT management in educational institutions has been emphasized in multiple studies. Research by Itarian (2020) indicates that automation, predictive analytics, and AI-driven monitoring can play a crucial role in reducing recurring IT incidents and improving service availability. Automated IT management solutions help universities detect potential issues before they escalate, allowing IT teams to take preventive measures and minimize disruptions.

The literature suggests that while many universities recognize the importance of IT service management, the lack of proper implementation frameworks often leads to inefficiencies in service delivery. Studies emphasize the necessity of adopting ITIL-based ITSM solutions to address these challenges and create a more stable, responsive, and user-friendly IT environment in higher education institutions. By integrating structured service management practices with modern ITSM tools, universities can achieve greater efficiency, reduce downtime, and enhance the overall academic experience for students and faculty.

This study builds upon the existing literature by analyzing real-world IT incidents and service request patterns in university settings, providing practical insights into how ITIL frameworks and ITSM tools can be tailored to meet the specific needs of higher education institutions. The findings will contribute to ongoing discussions on IT governance, digital transformation, and service optimization in academic environments.

5. Research methods

To analyze the effectiveness of ITIL-based IT infrastructure management in educational institutions, this study employs a combination of qualitative and quantitative research methods. These methods help assess current IT service management practices, identify key challenges, and evaluate the impact of ITIL-based ITSM tools in universities. By adopting a case study approach, the research focuses on universities and their IT infrastructure management practices, using empirical data collection, expert interviews, surveys, and process analysis to determine how ITIL-based frameworks can enhance IT service delivery.

The research includes multiple data collection methods to ensure a comprehensive understanding of IT service management in educational institutions. Focus groups were conducted with IT administrators, academic staff, and students to identify common IT issues, service delays, and user expectations. These discussions provided valuable insights into the problem areas affecting IT service management efficiency. Structured interviews with IT managers, service desk staff, and educational technology experts further complemented these discussions by gathering detailed information about existing IT infrastructure, service request workflows, and incident resolution processes. The interviews explored IT service challenges in universities, the effectiveness of current IT management strategies, and the potential improvements brought by ITIL implementation.

To capture a broader perspective, structured surveys were distributed to students, faculty members, and IT personnel to assess user satisfaction with IT services, response times for IT service requests, and the frequency and resolution of IT incidents. The survey responses helped quantify the impact of ITIL-based ITSM tools on service performance and user experience. In addition to surveys and interviews, real-life case studies of universities that have implemented ITIL-based ITSM tools such as Jira Service Management (JSM) were analyzed. These case studies provided valuable insights into pre- and post-implementation comparisons of IT service performance, highlighting the benefits of automation in incident tracking, service request processing, downtime reduction, and operational efficiency improvements.

To further validate findings, IT service data from university IT departments were examined, including historical incident logs, service request records, and IT support tickets. This analysis allowed for the identification of the most common IT issues, measurement of average resolution times

before and after ITIL adoption, and detection of recurring incident patterns and potential areas for improvement.

The study employs both qualitative and quantitative analysis methods to interpret the collected data. Responses from interviews, focus groups, and surveys were analyzed using thematic analysis to identify recurring themes and patterns related to IT infrastructure management challenges and best practices. Statistical methods were applied to IT service logs and survey responses to measure changes in IT service performance, using key performance indicators such as average incident response and resolution time, user satisfaction scores before and after ITIL implementation, and reductions in unresolved or escalated incidents. Comparative analysis was conducted to assess IT performance before and after the adoption of ITIL-based ITSM tools like Jira Service Management, providing a clear picture of the effectiveness of structured IT service management in improving operational efficiency.

To ensure the validity and reliability of the research, multiple measures were taken. Triangulation was applied by using various data sources, including interviews, surveys, and IT service records, to cross-verify findings. Pilot testing was conducted on a small sample before full-scale implementation of surveys and interview questions to ensure clarity and relevance. Additionally, IT service management professionals reviewed the research findings to confirm their accuracy and applicability to real-world IT service environments in universities. These steps helped enhance the credibility of the study and ensured that its conclusions were based on well-substantiated evidence.

6. Research results

The research findings provide valuable insights into the effectiveness of ITIL-based IT infrastructure management in educational institutions. The study analyzed IT service efficiency before and after the implementation of ITIL-based ITSM tools, focusing on incident management, service request handling, automation, and user satisfaction. By comparing pre- and post-implementation data, the study highlights the transformative impact of structured IT service management on the operational efficiency of university IT departments.

Before the adoption of ITIL-based ITSM tools, several challenges hindered effective IT service management. The analysis of focus groups, interviews, and service logs revealed inefficiencies in incident management, as 78% of surveyed students and faculty reported delays in IT issue resolution. Frequent issues such as network failures, software malfunctions, and system downtime were not addressed in a timely manner due to the lack of a structured prioritization system. IT support teams relied on manual tracking of service requests, which often resulted in miscommunication, unresolved issues, and delays in resolution. The absence of service automation further exacerbated these inefficiencies, as 85% of IT staff acknowledged that repetitive IT tasks were handled manually, increasing workload and response times. Additionally, the lack of a centralized service request system forced students and faculty to report IT issues through email, phone calls, or in person, making it difficult to track and prioritize requests. IT departments also lacked performance monitoring tools, preventing them from analyzing recurring problems and optimizing IT service strategies.

After the implementation of ITIL-based ITSM tools such as Jira Service Management, significant improvements were observed across multiple areas. Incident resolution time decreased by 52%, from an average of 48 hours to 23 hours, due to the structured workflows and automated ticketing system. The categorization and prioritization of incidents allowed IT teams to address issues more efficiently, while standardized escalation procedures ensured that critical problems were resolved without unnecessary delays. The adoption of structured workflows also reduced response time for service requests by 45%, enabling IT teams to prioritize urgent cases based on severity and impact. Real-time tracking and automated notifications enhanced communication between IT teams and end-users, reducing uncertainty regarding the status of their service requests.

The research findings also highlight an increase in user satisfaction with IT services, which rose by 60% after the implementation of ITIL-based ITSM tools. Faculty members appreciated real-time

updates on service requests, allowing them to plan their work more effectively without IT disruptions. Students benefited from faster resolution times, minimizing the impact of technical problems on their academic experience. The integration of automation and self-service options played a key role in this improvement, as 75% of IT tasks, including password resets and software installations, were automated using Jira Service Management workflows. The introduction of a self-service knowledge base led to a 40% reduction in IT support requests, as users could independently find solutions to common issues without contacting IT support. Chatbots and automated response systems further enhanced accessibility, providing immediate guidance for frequently encountered technical problems.

In addition to optimizing IT service processes, ITIL-based implementation introduced structured performance monitoring, allowing IT teams to track service efficiency using dashboard reports and analytics. This facilitated the prediction and prevention of recurring incidents through data-driven decision-making. Monthly incident reports enabled IT departments to identify trends, optimize resource allocation, and continuously refine their service delivery strategies. Key performance indicators such as average resolution time, first-response time, and user feedback ratings were actively monitored, contributing to continuous improvement in IT service management.

The broader implications of these findings suggest that structured IT service management is essential for enhancing operational efficiency in higher education institutions. The successful implementation of ITIL-based ITSM tools resulted in measurable improvements across multiple dimensions, including incident resolution speed, automation efficiency, and user satisfaction. These findings demonstrate that universities can significantly benefit from adopting best practices in IT service management, leading to a more reliable and responsive IT environment. Furthermore, the study underscores the importance of proactive IT management in mitigating disruptions and improving IT governance. The integration of automation, real-time monitoring, and self-service options has not only reduced the workload on IT teams but also empowered users to resolve common issues independently.

Overall, the research demonstrates that ITIL-based IT infrastructure management serves as a robust framework for optimizing IT services in universities, ultimately contributing to a better academic and administrative experience for students, faculty, and staff. These findings provide a foundation for further research on the long-term impact of ITSM tools in education, emphasizing continuous improvement strategies and the adoption of emerging technologies in IT governance.

7. Prospects for further research development

The findings of this study highlight the significant benefits of ITIL-based IT infrastructure management in educational institutions. However, they also open new avenues for further research and development. As technology advances and educational demands evolve, future studies can explore additional ways to enhance IT service management, automation, and user experience in universities. The ongoing digital transformation in higher education requires continuous adaptation of IT service management frameworks, presenting numerous opportunities for further research.

One important area for future research is the expansion of ITIL adoption in educational institutions beyond incident management and service requests. Further studies could analyze additional ITIL processes such as change management, problem management, asset and configuration management, and service level management. Change management research could evaluate how universities handle IT system upgrades, minimize disruptions, and ensure smooth transitions when implementing new technologies. Problem management studies could investigate predictive approaches for identifying recurring IT issues and developing preventive strategies. Research on asset and configuration management could explore how ITIL-based tools assist universities in managing IT assets, software licenses, and cloud-based resources more efficiently. Additionally, service-level management research could focus on defining and measuring IT service expectations in higher education, ensuring that IT departments meet performance benchmarks that align with institutional goals.

Another potential area of research is the integration of artificial intelligence and machine learning in IT service management. While ITIL-based ITSM tools have improved service efficiency, further research could explore the role of AI in service automation. This includes AI-powered chatbots that provide real-time IT support to students and faculty, predictive analytics for forecasting IT incidents before they occur, and automated ticket classification systems that intelligently route service requests to the appropriate IT personnel. Machine learning algorithms could be examined for their ability to detect patterns in IT service requests, allowing universities to proactively address system vulnerabilities and enhance decision-making processes.

The increasing adoption of cloud computing in universities presents another research opportunity. Future studies could examine how ITIL best practices can be adapted for cloud-based ITSM, considering the shift from traditional on-premise infrastructure to hybrid or fully cloud-based environments. Research could explore the impact of cloud computing on IT service performance, security, and cost-effectiveness, as well as strategies for maintaining ITIL compliance in cloud service management. Additionally, universities face the challenge of balancing on-premise and cloud-based IT services while maintaining ITIL standards, an area that requires further investigation to develop best practices for hybrid IT environments.

Cybersecurity remains a critical issue for higher education institutions, making it a key area for further study. Research could analyze how ITIL-aligned security practices improve data protection, mitigate security risks, and enhance compliance with regulatory standards in universities. The role of ITIL in preventing and responding to cyber incidents, such as phishing attacks, ransomware threats, and data breaches, could be further explored. Additionally, future studies could assess best practices for securing IT service management platforms like Jira Service Management, ensuring that ITSM tools themselves are protected against cyber threats.

Measuring the long-term impact of ITIL in universities is another avenue for research. While this study provided insights into short-term performance improvements, further research could examine the effects of ITIL implementation on IT service quality, efficiency, and user satisfaction over a longer period. Studies could investigate how ITIL adoption influences student and faculty satisfaction over multiple academic years and conduct a cost-benefit analysis of ITIL-based ITSM in universities. Longitudinal research could assess the sustainability of ITIL-based improvements and whether continuous service optimization efforts lead to further operational enhancements.

Comparative studies between universities could provide additional insights into ITIL implementation. Future research could compare ITIL adoption across multiple educational institutions, examining differences in IT service performance and effectiveness. A comparison of public and private universities could reveal variations in ITSM outcomes based on funding, resources, and institutional structures. Additionally, international studies could explore how universities in different regions implement ITIL frameworks, taking into account cultural, regulatory, and technological differences.

These research directions would contribute to a deeper understanding of IT service management in educational institutions and support continuous improvement in ITIL-based IT infrastructure management. As higher education institutions continue to rely on digital services, further research will be essential to ensure that ITSM frameworks evolve alongside emerging technologies and institutional needs.

8. Conclusions

This study highlights the importance of structured IT infrastructure management in educational institutions, demonstrating how ITIL-based practices can enhance efficiency, service quality, and user satisfaction. The analysis of existing incidents and service requests revealed significant challenges related to unstructured issue tracking, delayed responses, and a lack of automation, all of which negatively impact the learning and administrative environment. Implementing an IT service

management approach based on ITIL principles helps address these challenges by providing a standardized framework for incident resolution, service requests, and infrastructure monitoring.

The research findings emphasize that well-defined IT processes improve operational efficiency, reduce downtime, and enhance service delivery for students, faculty, and staff. The adoption of modern IT service management tools, such as Jira Service Management, further strengthens these processes by enabling automation, real-time tracking, and better resource allocation. By integrating ITIL practices with advanced software solutions, universities can establish a more responsive and resilient IT environment.

The study also confirms that proactive IT management contributes to long-term institutional stability and continuous improvement in service quality. Establishing clear workflows, automating repetitive tasks, and implementing structured reporting mechanisms allow IT departments to anticipate and prevent recurring issues rather than merely respond to them. These improvements lead to increased transparency, better communication between IT teams and users, and a more structured approach to IT governance.

As technology continues to evolve, educational institutions must remain adaptable and proactive in their IT strategies. Future research can further explore the integration of artificial intelligence, machine learning, and cloud-based ITSM solutions to enhance service efficiency. Additionally, comparative studies across multiple universities can provide deeper insights into best practices and optimization strategies for IT infrastructure management.

In conclusion, ITIL-based IT service management provides a comprehensive and effective approach for improving IT infrastructure in educational institutions. Its implementation leads to more efficient processes, reduced service disruptions, and a better overall experience for students and staff. By continuously refining ITSM practices, universities can create a more stable, scalable, and innovative learning environment.

References:

1) Surguladze, G., & Urushadze, B. (2014). International Experience of Information Systems Management (BSI, ITIL, COBIT). Technical University of Georgia. ISBN 978-9941-20-458-6. Available online.

2) IBM. (2022). What is IT Infrastructure? Online resource.

3) Atlassian. (2022). Incident Management in ITSM. Online resource.

4) Itarian. (2020). Service Desk Overview. Online resource.

5) Atlassian. (2021). IT Service Management (ITSM). Online resource.

6) Axelos. (2019). ITIL Foundation, ITIL 4 Edition. TSO, London.

7) Atlassian. (2022). Jira Service Management: Features and Benefits. Online resource.

8) Galliers, R. D., & Leidner, D. E. (2014). Strategic Information Management: Challenges and Strategies in Managing Information Systems. Routledge.

9) Hochstein, A., Zarnekow, R., & Brenner, W. (2005). ITIL as Common Practice Reference Model for IT Service Management: Formal Assessment and Implications for Practice. Proceedings of the IEEE International Conference on e-Technology, e-Commerce and e-Service.

10) Feeny, D. F., & Willcocks, L. P. (1998). Core IS Capabilities for Exploiting Information Technology. Sloan Management Review, 39(3), 9-21.

11) Pollard, C., & Cater-Steel, A. (2009). Justifications, Strategies, and Critical Success Factors in Successful ITIL Implementations in U.S. and Australian Companies: An Exploratory Study. Information Systems Management, 26(2), 164-175.

12) Ong, C. S., & Wang, S. Q. (2015). Managing IT Service Management Implementation: A Critical Success Factor Approach. Journal of Enterprise Information Management, 28(5), 637-657.

13) Winniford, M., Conger, S., & Erickson-Harris, L. (2009). Confusion in IT Service Management Adoption: A Study of ITIL Implementation Approaches. Proceedings of the Americas Conference on Information Systems (AMCIS).

14) Zarnekow, R., Hochstein, A., & Brenner, W. (2006). A Maturity Model for IT Service Management. Proceedings of the International Conference on e-Business.

15) Kumbakara, N. (2008). Managed IT Services: The Role of IT Standards. Information Management & Computer Security, 16(4), 336-359.

16) Dahlberg, T., & Kivijärvi, H. (2006). An Integrated Framework for IT Governance and the Development and Validation of an Assessment Instrument. Proceedings of the Annual Hawaii International Conference on System Sciences.