

Library Innovations in Realizing the Smart Campus Transformation at Universitas Islam Negeri Sayyid Ali Rahmatullah Tulungagung

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ABSTRACT

The UIN Sayyid Ali Rahmatullah Library has currently implemented smart campus technology, which is one of its innovations and has brought about major changes to library services. This study aims to identify the forms of innovation carried out by the library to realize smart campus-based service changes, as well as the obstacles and efforts faced by the library in implementing service transformation in the digital era. A descriptive qualitative method was applied in this study to collect data through direct observation, semi-structured interviews with three informants (the head librarian, librarian, and information technology coordinator), and documentation. Miles and Huberman's theory was used to analyze the data by classifying the data, presenting the data, and verifying the conclusions, as well as validating the data through triangulation of data sources. The findings obtained from the innovations carried out by the UIN Sayyid Ali Rahmatullah Tulungagung library to create a smart campus transformation are online-based and directly integrated with SLiMS and RFID, collaboration and sharing between librarians, organizing seminars, and designing library rooms. Another aspect of innovation uses Diao Ai Lien's Theory: Transformation of functions, facilities, and human resources (librarians). However, the existing constraints are that the transformation of the UIN Sayyid Ali Rahmatullah library based on the Smart Campus has not yet been fully implemented, due to frequent server errors, limited access to the Smart Campus, insufficient IT resources, and limitations of librarians. Therefore, it is recommended to add a direct notification feature on mobile devices.

Keywords: *Library Transformation; Smart campus; Technology Era*

1. INTRODUCTION

Today's sophisticated technology requires libraries to adapt to developments in information technology (Panda & Chakravarty, 2022). One such adaptation involves transforming library services to provide practical information services to users, ensuring they do not fall behind other libraries (Ashiq,

Jabeen, & Mahmood, 2022). This development can be achieved by leveraging new technologies such as advanced and easily accessible application systems and websites (Echedom & Okuonghae, 2021). One form of transformation adopted by some libraries is the implementation of a “smart campus” initiative, which serves as a supportive facility for the academic community, demonstrating their commitment to fulfilling the Tri Dharma of Higher Education (Polin, Yigitcanlar, Limb, & Washington, 2023).

Libraries must undergo a transformation aligned with their function as learning resource centers for the entire community (Turcan, 2024), capable of shifting from the traditional library model; a mere repository of books, to the contemporary concept of a creative and innovative learning resource center that provides relevant information (Ridhatama, 2023). Although many variables influence the process, transformation does not always occur instantly (Marion & Fixson, 2021). Some factors contributing to transformation are as follows: (a) Each person presents themselves as an expression of their identity. (b) Changes in lifestyle, such as shifts in societal patterns; (c) The influence of new advanced technologies that create a desire to follow trends (Alfiah & Supriyani, 2016).

IBM first used the term “smart city” in 1998, but the concept of a “smart city” was not fully developed until the 2000s (Annisah, 2018). In fact, the term “smart campus” refers to the facilities owned by a campus that serve to support the activities of the academic community (Indra & Rizky, 2020). The term “smart campus” is derived from online digital platforms managed by universities (Chen, 2012) and is intended to enhance student capabilities (Hirsch, 2011). This solution is also being implemented at universities abroad that have adopted the concept of smart campus-based technology, with the aim of supporting research and advanced education, administrative services, and information systems. One such example is Dalhousie University (Cordiaz, 2017).

The term “smart campus” refers to a university’s ability to utilize all available information sources quickly and efficiently (Supangkat, 2020). Developments in smart campuses include the provision of infrastructure, basic campus services and applications, and content. Smart campus applications support the Three Pillars of Higher Education, such as Wi-Fi, mobile e-learning apps, and web conferencing (Cordiaz, 2017). Various smart campus technologies are utilized by higher education institutions, including digital attendance systems for students and faculty, stable WiFi networks, automated air conditioning and lighting, mobile applications, CCTV, projectors, and academic information systems, among others (Mahariya et al., 2023). On the other hand, a smart campus centers on facilities that support all activities on campus in various academic endeavors, utilizing information technology as the backbone of support (Putra, 2017).

According to Hardi (2017), the characteristics and features of a smart library include: (1) Smart Technology such as RFID and mobile devices in library services; (2) Smart Environment; (3) Smart Service; (4) Smart Communities/Users; and (5) Smart Librarians/Staff. Within the smart campus system, the library plays a strategic role as a hub for digital learning. In other words, the implementation of a smart campus is expected to meet information needs and support learning activities that can be conducted anywhere (Valks, Arkesteijn, Koutamanis, & Den Heijer, 2021). On the other hand, smart campus technology can enhance efficiency and user satisfaction with services (Elbertsen, Kok, & Salimi, 2025).

It all began with the academic community at UIN Sayyid Ali Rahmatullah, who were among the first to use the SIAKAD (Academic Information System) application for campus academic management. SIAKAD is a web-based application designed to transform the management of academic data and related information into useful insights (Afkar, 2023). Technological advancements have progressed rapidly, leading to the emergence of smart campus applications in 2022, which are considered more comprehensive, practical, and efficient in their management (Polin et al., 2023). Since then, SIAKAD has gradually been replaced by the smart campus system, which offers a wide range of unrestricted features.

Consequently, the UIN Sayyid Ali Rahmatullah Library has followed the university's policy to implement the smart campus system as a supporting service facility.

The UIN Sayyid Ali Rahmatullah Library undertook a transformation to implement the smart campus system as a means to support efficient service delivery and management processes. The smart campus facilitates technology-based learning access, serving as a key driver in the process of enlightening the nation's life (Wibawa, 2017). The smart campus features comprehensive information technology-based support facilities within the Library, such as the Library's book catalog, book loan status, a list of e-books with diverse collection types, and other information services (Shihao, Dahnil, & Saad, 2025). The importance of implementing information technology in libraries is emphasized in Article 14(3) of Indonesian Law No. 43 of 2007 on Libraries, which states that "*setiap Perpustakaan mengembangkan layanan Perpustakaan sesuai dengan kemajuan teknologi informasi dan komunikasi*" (Pemerintah Republik Indonesia, 2007).

The UIN Sayyid Ali Rahmatullah Library utilizes a smart campus system as an easy and practical management and service platform to drive positive change through digital technology-based services. A smart campus system is essential for the evolution of library management, transitioning from manual processes to technology-driven systems. However, there are several obstacles in the transformation to a technology system that uses databases for every HR service, such as book borrowing and return machines, collection management machines, get-in and get-out detector machines, and others.

A number of studies have examined the transformation of libraries in the digital age. Wulansari et al. (2022) discuss the transformation of village libraries based on social inclusion and its impact on community well-being (Wulansari et al., 2022). On the other hand, Lathifatuddini and Thamrin (2021) focus on the development of smart campuses to improve learning systems (Lathifatuddini and Thamrin, 2021), and Nurmalina (2021) evaluates the transformation of the UIN Raden Fatah Palembang library toward a Big Data Era Research Library (Nurmalina, 2021).

However, these studies have not specifically addressed library service innovations in supporting smart campus transformation within the PKIN context, nor how libraries navigate human resource and digital infrastructure limitations in this process. In other words, this study addresses this gap by examining the case of UIN Sayyid Ali Rahmatullah Tulungagung, which has implemented a smart campus system and technology-based innovations such as SLIMS and RFID in its library. On the other hand, the theoretical framework used in previous research on library transformation differs from this study; it employs Ranganathan's (2004) "Five Laws of Library Science." In contrast, this study employs Diao Ai Lien's (2004) theory of library transformation.

According to Diao Ai Lien's theory, library transformation involves gradual changes that lead to improvements, both in terms of service delivery and management. Library transformation is categorized into three parts: functional transformation (library functions based on a smart campus), facility transformation (developing facilities to support new functions), and human resource transformation (a critical element necessary for transformation) (Ridhatama, 2023). Library transformation must be able to shift the library's function from a mere "book building" to an information center capable of meeting users' information needs. Furthermore, the transformations implemented in libraries extend beyond the use of automation systems and the digitization of services; they also involve changes in the role of librarians, the provision of technological facilities such as RFID, and the integration of data and information with the campus academic system. This transformation reflects ongoing efforts to address the demands of the times and the increasingly dynamic needs of library users.

Based on this background, the researcher decided to conduct a study titled "Library Innovations in Realizing Smart Campus-Based Transformation at UIN Sayyid Ali Rahmatullah Tulungagung." The

objective of this study is to identify forms of library service innovation that realize smart campus transformation and to analyze the challenges and efforts made by the library to adapt.

2. RESEARCH METHOD

This study employs a qualitative research design with a descriptive approach. This research phase involves collecting descriptive data, such as written or spoken words from observed informants (Bogdan, 1992). The study aims to understand the changes occurring at the UIN Sayyid Ali Rahmatullah Tulungagung Library in its efforts to create a smart campus environment amid technological advancements. Data were collected from two sources (Arikunto, 2016), namely: (1) primary data, which are data collected directly by the researcher from primary sources. The primary data sources were the library director, librarians, and the information technology coordinator; (2) secondary data, which are data collected in the form of written documents or photographs. The secondary data sources were documentation and interview results.

In this study, data was collected as part of research efficiency. Data acquisition is the primary objective of this study. Without employing appropriate data collection techniques, the researcher would not obtain data meeting established standards (Sugiyono, 2025). The three stages of data collection are: (1) Observation, specifically participatory observation, which involves direct observation of various activities related to the library's transformation process in supporting the smart campus facilities at the UIN Sayyid Ali Rahmatullah Tulungagung Library. (2) Interviews, using structured interview techniques to systematically obtain the necessary information. Informants (sources) are individuals possessing information regarding the research subject, obtained through direct interviews. The researcher's informants include the Library Director, Librarians, and the Information Technology Coordinator regarding the library's transformation process, changes from the past to the present, and the latest systems and services. In addition to the transformation process, the researcher also asked the Library Director and librarians in-depth questions about the implementation of the smart campus initiative as a supporting factor. (3) Documentation consists of research findings obtained through observation, interviews, and supporting documents related to the study, utilizing various forms of information such as photographic documentation of book lending and return machines and other smart campus support facilities

The data analysis technique used the Miles and Huberman model (Miles et al., 2014), specifically: (1) Data reduction involved processing the informants' responses regarding the transformation of the UIN Sayyid Ali Rahmatullah Library in support of the smart campus, making it the subject of the study. (2) Data presentation is presented in a narrative format based on the informants' responses. (3) Conclusions are derived from the information gathered through the informants regarding the transformation of the UIN Sayyid Ali Rahmatullah Library in realizing the smart campus. Subsequently, verification of these conclusions is conducted. Meanwhile, to evaluate the validity of the data, data source triangulation was employed by collecting data from various sources using the same method. This means that the same questions were used in interviews with different sources.

3. RESULTS AND DISCUSSION

Transformation has become an important aspect for libraries, as the involvement of libraries is part of the data collection process and is closely related to their function as lifelong education for the entire community (Vitriana, 2024). In this context, discussions about library transformation focus on their functions and facilities, a topic that has been discussed in (Diao, 2004). Thus, the researcher uses the library transformation from Diao Ai Lien's theory, which is considered capable of addressing the issues

in this study. According to Diao Ai Lien's theory in (Ridhatama, 2023), library transformation undergoes gradual changes that bring improvements, both in terms of service and management. This creates a unique challenge for libraries to fulfill their role as agents of change. Thus, the transformation of libraries is divided into three parts: functional transformation (smart campus-based library functions), facility transformation (developing facilities to perform new functions), and human resource transformation (an essential element needed for transformation). It is hoped that this theory can address the research objectives, namely to identify forms of library service innovations that realize the smart campus transformation and to analyze the constraints and efforts of the library to adapt. The results and discussion can be clarified in the following discussion:

The Form of Innovation at the UIN Sayyid Ali Rahmatullah Library to Realize the Transformation into a Smart Campus

The library is established to be utilized as much as possible to improve self-quality and enhance information knowledge. The presence of the Library certainly brings satisfaction to users in utilizing information technology, thereby allowing the Library to enhance its services. Its innovations include creating something new or making various changes based on concepts or ideas. One form of innovation implemented in the library, according to informant 2, who is one of the librarians, is that:

"Sebelum adanya smart campus perpustakaan sudah menggunakan SLiMS untuk kemudahan layanan dan penunjang layanan Perpustakaan menggunakan google form, google sites dan lain-lain" (NN)

The efforts made by the UIN Sayyid Ali Rahmatullah Tulungagung library to improve services currently encompass several aspects of innovation being implemented. In data collection, the researcher conducted interviews with key informants, namely the Head of the Library, Librarians, and the Information Technology Coordinator. The role of the Library Information Technology Coordinator is to manage the automation system, data entry into software, and maintenance of the automation system and computer network in the Library. Based on the interview results with informant 3, who serves as the Coordinator of Technology and Information, it was explained that:

"Perpustakaan UIN Sayyid Ali Rahmatullah Tulungagung sudah melakukan berbagai inovasi terkait pelayanan Perpustakaan dengan menerapkan Smart campusdimulai sejak tahun 2022, dimana sistem berbasis smart campusmulai diterapkan sebagai bentuk pengelolaan Perpustakaan" (GI)

One form of a smart campus thru a website via mobile phones has become one of the processes in the development of library services that have implemented the online-based SLiMS service system, which is connected and can be accessed anytime and anywhere. The innovation of the activities carried out will run smoothly if librarians can optimize library services on the smart campus features. On the other hand, there are plans to design the Library room not instantaneously. However, thru the stages of first optimizing the smart campus system services. Next, start arranging and designing the Library space so that visitors feel attracted to visit the Library and feel comfortable while reading books.

Referring to the findings in the field, it can be concluded that the innovations at the UIN Sayyid Ali Rahmatullah Library in realizing the smart campus transformation include the need to enhance collaboration among librarians, sharing among librarians, introducing the smart campus thru seminars/webinars, and designing the library space with a modern contemporary model. There are other innovations implemented by the UIN Sayyid Ali Rahmatullah Library based on smart campus transformation that align with Diao Ai Lien's theory in the book "Transformasi Dunia Perpustakaan"

(Santi, 2014), which states that library transformation includes three main aspects, among others:

a. Function Transformation

As explained by Diao Ai Lien, function transformation is a change that adds value to the library's function. Libraries must continue to innovate to enhance their functional value. Libraries now must provide collections in various digital formats rather than just offering print collections (Lien, 2022). The UIN Sayyid Ali Rahmatullah Tulungagung Library continues to evolve its functions, which now include supporting the development of library technology as an information center in line with changes based on smart campus initiatives.

In carrying out its library functions, the UIN Sayyid Ali Rahmatullah Library needs to transform its role into an information center, particularly thru the implementation of the smart campus program as a supporting facility that can facilitate easy access to information for users and ease the librarians' access to information. Managing library materials/inventory and providing easy access to users for the collections available in the library. In terms of function, the Library must strive to play an important role in adding value to its users by providing access to information.



Figure 1. Display of E-Library UIN SATU

Based on the research findings, the transformation of functions at the UIN Sayyid Ali Rahmatullah Tulungagung Library is evident thru the utilization of E-Library and the integration of library services with the Smart Campus platform. Various services that were previously conducted conventionally have now shifted to an information technology-based system, allowing users to obtain information and access library services more quickly and efficiently. The existence of online services indicates that the function of the library is no longer limited

to providing print collections, but also as a provider of digital information access that can be reached anytime and anywhere.

These findings indicate that the transformation of functions occurring is not merely a change in tools or service media, but a change in the orientation of library services themselves. The library is beginning to play a role as a center for digital information access that supports the processes of learning, research, and academic development within the campus environment. With the presence of Smart Campus-based services, the library becomes part of the digital ecosystem of higher education institutions that is integrated with users' academic activities. This condition aligns with Diao Ai Lien's concept of functional transformation, which emphasizes that libraries must be able to create added value thru the use of technology to improve the quality of information services.

Thus, the transformation of functions at the UIN Sayyid Ali Rahmatullah Tulungagung Library can be seen from the shift in the library's role, which initially focused on managing physical collections, toward providing digital information services that are more adaptive to user needs. These changes have become one of the important foundations in supporting the implementation of a Smart Campus because they enable the creation of more effective, efficient, and sustainable information access for the academic community.

b. Facility Transformation

According to Diao Ai Lien, the transformation of library facilities is an improvement of the facilities compared to before, such as providing more facilities or spaces that are integrated with new technology (Lien, 2022). The UIN Sayyid Ali Rahmatullah Tulungagung Library has actually been making changes in library service management since 2008 by using SLiMS7, but it was not yet connected to RFID. In 2022, it started using a smart campus connected to SLiMS along with RFID machines. This explanation is supported by the opinion of informant 2, who is a librarian, that:

"Penggunaan fasilitas Smart campus di Perpustakaan seperti SLiMS yang terhubung langsung dengan smart campus, fungsinya untuk aktivasi peminjaman buku, katalog yang sudah terintegrasi dengan smart campus, dan denda keterlambatan. Jadi semisal ada notif keterlambatan buku akan muncul pada akun smart campus masing-masing" (NN)

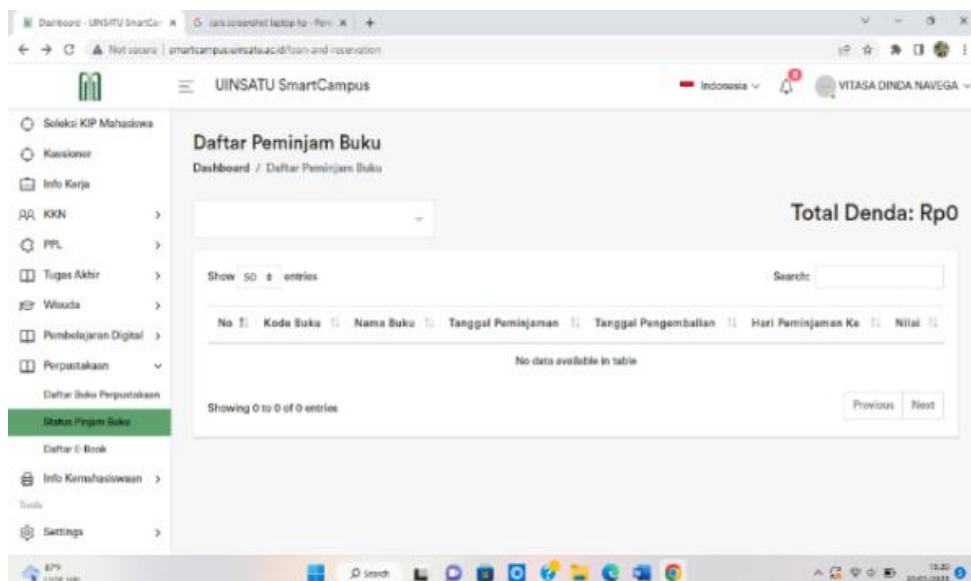


Figure 2. Late Fee Page on the smart campus website

That opinion was reinforced by informant 3, the Library Coordinator in the field of information technology development, who stated that:

"Terkait perubahan fasilitas yang terhubung smart campus bagian mesin pengelolaan, sebelumnya masih manual, saat ini sudah mempunyai mesin khusus pengelolaan bahan pustaka, peminjaman dan pengembalian buku, sebelumnya menggunakan komputer biasa, saat ini mempunyai mesin khusus peminjaman dan pengembalian buku berbasis Smart campus" (GI)

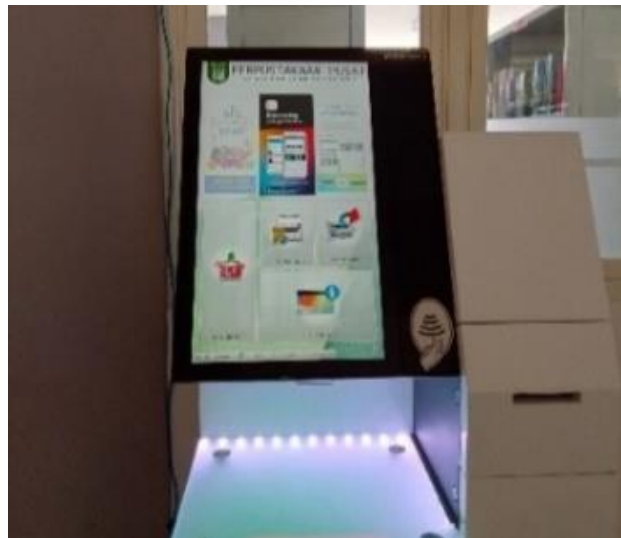


Figure 3. Book Borrowing and Returning Machine

A similar statement was also made by informant 1, the Head of the Library, who stated that:

"Fasilitas yang terhubung Smart campus yaitu mesin detector check in dan check out, sebelumnya masih manual menggunakan buku daftar hadir pemustaka, saat ini telah ada mesin detektornya, peminjaman dan pengembalian buku mandiri dan segala mesin yang terhubung RFID di Perpustakaan" (SH)



Figure 4. Check-In Machine



Figure 5. Check-Out Machine

On the smart campus web application, there are features such as a library book list, book borrowing status, and an e-book list. Almost all facilities at the UIN Sayyid Ali Rahmatullah Tulungagung Library have implemented the Smart Campus program. However, the late book fine feature is still not stable because the regulations are not clear. Based on an interview with the Head Librarian, it was explained that there are still several smart campus service facilities that have not been implemented, one of which is the late book return fine, which has not been implemented until now because it is not stable, and the regulations are not clear and the SOP has not been received.

The Smart Campus program has just been implemented, and a gradual process is needed to optimize the use of the Smart Campus in the library. The data on the supporting facilities of the UIN Sayyid Ali Rahmatullah Library before and after the transformation can be seen in Table 1. This shows that the Library has already integrated with the change activities. This will increase the needs, satisfaction, and trust of users in the Library. The various changes described above align with the changes in facilities to support new functions such as Information and Communications Technology (ICT) and the Library building (Nurmalina, 2021). On the other hand, it is also in line with the TAM theory (Davis, 1989) regarding perceived usefulness, which refers to the extent to which a person believes that using a particular system can provide benefits in improving their performance. In other words, it can be concluded that the Library is important to facilitate with connecting features, and the changes are significantly felt to make it easier for users to access and use the facilities available at the UIN Sayyid Ali Rahmatullah Library quickly and practically.

The findings from the interviews indicate that the transformation of facilities at the UIN Sayyid Ali Rahmatullah Tulungagung Library is not only marked by the addition of technological devices but also by changes in the service mechanisms from a previously manual system to a more automated and integrated system. The integration of SLiMS, RFID, and the Smart Campus platform enables various service activities, such as collection searches, borrowing, returning, and monitoring loan statuses, to be carried out more efficiently. This change shows that technology no longer functions merely as a supporting tool, but has become an integral part of the library service process.

Furthermore, the presence of self-checkout machines, automatic check-in and check-out systems, and access to services thru the Smart Campus application reflects the library's efforts to enhance the quality of user experience. These facilities provide convenience, expedite service processes, and reduce users' dependence on librarian assistance in routine administrative activities. This condition aligns with the goals of the smart campus transformation, which emphasizes the use of technology to create services that are more effective, efficient, and user-oriented.

However, the research results also indicate that the transformation of facilities still faces several challenges, one of which is the suboptimal implementation of late fee features due to regulatory constraints and the lack of clear standard operating procedures. These findings indicate that the success of facility transformation does not only depend on technological readiness but also requires policy support and governance that can ensure the sustainability of technology use. Therefore, facility transformation should be understood as a process that encompasses the integration of technology, regulation, and service management aspects simultaneously.

c. Human Resource Transformation (Librarian)

Human Resource Transformation (librarian) is the change in the librarian's ability patterns to enhance their competence in mastering the Smart Campus program features in Library services. Competence is the knowledge and skills characteristic of an individual, or traits, that are very important for success in a job. According to the European Computer Driving Licence (ECDL) standards, the competencies of librarians in the field of information technology consist of: a. Basic concept of IT, b. Using the computer and managing files, c. Word processing, d. Spreadsheet, e. Databases, f. Presentation, and g. Information and communication via internet and email (David and Poulter, 2022).

Transformation of human resources (librarians) as the main support in various service activities in the Library. Librarians must possess skills and competencies acquired thru education or librarian training, which are responsible for managing and providing services in the Library. The UIN Sayyid Ali Rahmatullah Tulungagung Library is making changes in terms of the quality of its librarians, who are required to be professional in applying smart campus concepts in the current technological era, paying attention to competencies such as IT and service competencies as follows:

1) HR Criteria (Librarians)

To become a professional librarian, one must possess adequate knowledge, skills, expertise, and abilities in their field, as well as the ability to work collaboratively as a team. Managing and providing services to library users is the daily task of librarians. Librarians are responsible for managing all the Library's collections. Starting from selection, procurement of library materials, inventory, and the cataloging process. A librarian must always be aware of technology, which is a challenge for those who work as librarians. This is especially because in the modern era, library collections can be accessed anytime and anywhere via the internet. Librarians must adapt to modern technology and possess professional skills. one of which is responsible for the operation of the Smart campus.

According to Diao Ai Lien (2004), human resource capabilities require more than just knowledge and skills in the IT domain and user domain (Diao,

2004). In the UIN Sayyid Ali Rahmatullah Tulungagung Library, it is not only the librarians who serve the patrons; there are also various other managers and staff who help manage and provide the best service to the patrons. The details regarding the performance capabilities of the staff based on their respective roles can be seen in the following table:

Table 1. Human Resource Performance Capability

Human Resources	Performance Ability
Head of the Library	<ol style="list-style-type: none"> 1) Collaborating with other higher education institutions 2) Coordinating and supervising all library activities 3) Formulating policies for the development and enhancement of the Library
Coordinator of Collection Development/First Expert Librarian	<ol style="list-style-type: none"> 1) Coordinating the exchange of library materials with external institutions/agencies; 2) Coordinating the implementation of library materials needs analysis; 3) Mentoring librarians in the scope of Collection Development.
Coordinator of Library Material Processing/Junior Librarian	<ol style="list-style-type: none"> 1) Cataloging and labeling library books 2) Classifying library materials according to a specific classification system 3) Inventorying library materials into the master book and inventory book
Coordinator of Library User Services	<ol style="list-style-type: none"> 1) Mengkoordinasikan kegiatan layanan koleksi buku meliputi layanan keanggotaan, peminjaman dan pengembalian buku dan penataan buku di rak 2) Membantu pemustaka ketika mengalami kesulitan dalam mencari bahan referensi.
Coordinator of Information Technology Development	<ol style="list-style-type: none"> 1) Implementing IT activities and maintenance for the Library 2) Performing repairs on databases, networks, software, and hardware 3) Conducting routine data security activities within the Library server system
Secretary/First Librarian	<ol style="list-style-type: none"> 1) Planning programs and activities in the Library 2) Coordinating administrative matters, planning, evaluation, and reporting
Library Technical Staff	<ol style="list-style-type: none"> 1) Serving the return of borrowed books 2) Providing information assistance to all parties

From the presentation of the table, it can be concluded that the roles or performance of the human resources at the UIN Sayyid Ali Rahmatullah Library are supported by experts in their respective fields, including the Coordinator of the Information Technology Division, the Collection Development Division, the User Services Division, and the Library Technicians. To meet user demands in the technology era, especially in a smart campus, it is necessary to collaborate more to complement each other. By understanding the performance of each part to

observe and utilize knowledge in both quantity and quality cycles that focus on facilitating the utilization and development of knowledge according to the theory of Diao Ai Lien (Santi, 2014).



Figure 6. Providing User Education Training

2) Improvement of Human Resource Quality (Librarians)

The UIN Sayyid Ali Rahmatullah Tulungagung Library recommends its librarians to participate in librarian training to enhance their competencies. It was also mentioned by one of the librarians that to improve the quality of human resources, librarians can actively participate in several webinars organized by the Librarian Forum, seminars from the Higher Education Library Forum, or the National Library, for example, on repositories, services, library development, and current librarian regulations.

The UIN Sayyid Ali Rahmatullah Library plays an active role in enhancing human resources by implementing various initiatives, including librarian training, workshops organized by the National Library, seminars organized by the Higher Education Library Forum, and webinars organized by the librarian forum. These efforts significantly improve the quality of librarians, leading to potential career advancement. Librarians are required to have better skills than before. This can be seen from librarian training, seminars, and workshops. According to Diao Ai Lien's theory in Santi (2014), librarians do not merely assist those in need of information, but they also know how to access information to enhance its quality (Santi, 2014).



Figure 7. Strengthening National Level Library Accreditation



Figure 8. Attending an International Seminar

Research findings indicate that the transformation of human resources at the UIN Sayyid Ali Rahmatullah Tulungagung Library is not only marked by the enhancement of individual librarians' skills but also by the division of roles and work specialization that support the management of technology-based services. The presence of coordinators in the fields of information technology, collection development, user services, and library technical staff indicates that the transformation into a smart campus requires collaboration of various complementary competencies. This condition aligns with Diao Ai Lien's view, which emphasizes that the success of library transformation cannot rely solely on technology, but also requires human resources capable of managing, developing, and optimally utilizing that technology.

In addition, various competency enhancement activities such as seminars, workshops, webinars, and librarian training demonstrate ongoing efforts to prepare librarians to face changes in the digital information environment. In the context of a smart campus, librarians no longer serve merely as collection managers, but also as information facilitators, technology managers, and user companions in utilizing digital information sources. This change in role reflects a transformation in the paradigm of the librarian profession from a job oriented toward the management of

library materials to a profession oriented toward the management of knowledge and technology-based services.

Furthermore, the involvement of librarians in various professional development activities also indicates an organizational awareness of the importance of continuous learning. This becomes an important aspect in realizing a smart campus because the rapid development of information technology demands librarians to continuously update their competencies. Thus, the HR transformation carried out by the UIN Sayyid Ali Rahmatullah Tulungagung Library can be understood as an effort to build adaptive, collaborative human resources capable of supporting the sustainability of technology-based library services.

Challenges Faced in Using Smart Campus

System constraints are issues that arise from the combination of information technology with automation procedures. Meanwhile, the constraints from human resources (librarians) are issues caused by the users/librarians in operating the Smart Campus.

Based on field findings, there are several obstacles faced by the UIN Sayyid Ali Rahmatullah library in the process of transforming into a smart campus. From a systems perspective, there are issues with the server frequently encountering errors, the lack of authority to operate the smart campus application, and Wi-Fi problems that often cause disruptions. From the HR perspective, there is an insufficiency of the IT team specifically assigned to manage the smart campus, as well as a limited number of librarians, which causes their tasks to be disrupted when the smart campus server encounters errors. In this study, it was found that the smart campus is already connected to other servers, but if the server operates continuously without stopping, it could lead to service failure. This is not in line with the concept of information technology development, especially in the operations of the campus center, which should run according to university library standards.

Considering that the server is a key component in the process of transforming the library into a Smart campus-based library. With the elaboration of the various obstacles that have been mentioned, each institution certainly has its own challenges. The success achieved when facing challenges is even greater if those challenges can be overcome and passed (Sugiono, 2016).

Efforts to Overcome Smart Campus Usage

Challenges In addressing the existing challenges, the Library is certainly striving to always motivate positive contributions from any parties in the future. This was conveyed by informant 3, the information technology coordinator, that:

"Upaya-upaya yang dilakukan oleh pihak Perpustakaan UIN Sayyid Ali Rahmatullah Tulungagung sudah sesuai dengan kendala-kendala yang dihadapi, untuk server yang sering error upaya yang dilakukan adalah digantikan dengan manual, jadi ketika server down digantikan secara manual baik peminjaman maupun pengembalian bukunya dari petugas/pustakawan mencatat terlebih dahulu ketika server pulih kembali tinggal memasukkan data-datanya" (G1)

The efforts made by the UIN Sayyid Ali Rahmatullah Tulungagung Library to address the encountered issues include redirecting Library services to a manual system during server errors. In addition, frequently communicating with the ODP and creating discussion forums facilitates communication to improve the quality of smart campus usage performance and to enhance smart campus services when encountering issues in the Library.

4. CONCLUSION

Based on the research results of the changes in the UIN Sayid Ali Rahmatullah Tulungagung Library in supporting the smart campus transformation in the technological era, it can be concluded from the innovations carried out by this library in supporting the smart campus transformation. This library has been recognized as one of the innovative libraries, seen from its online-based service system integrated with the smart campus connected to SLiMS, collaboration among librarians, sharing among librarians, and holding seminars/webinars related to the use of the smart campus, as well as arranging and designing the library space with a modern contemporary model.

Suggestions that can be given for the UIN Sayyid Ali Rahmatullah Tulungagung Library in the future include optimizing the smart campus program services, such as activating the self-service book return machine and enabling other unused services like fines. Improving the performance quality of the smart campus usage to ensure it is quickly and easily accessible, and adding direct notification features from the smart campus to mobile device notifications. In addition, it is also necessary to develop a short-term roadmap by participating in various intensive IT training for librarians, creating an emergency response SOP when the server goes down. Furthermore, a long-term roadmap is needed, which includes the integration of an independent library server and the procurement of a dedicated IT team.

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