The Effect of Online Academic Library Services During the Covid-19 Pandemic on Undergraduate Students' Interest and Use Behavior

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Abstract. During the Covid-19 Pandemic, the Universitas Brawijaya (UB) Library in Indonesia devised the RemoteXs. Subsequently, the Perpustakaan Tun Abdul Razak Library (PTAR) at Universiti Teknologi MARA (UiTM) in Malaysia developed e-resources, an integrated online service. In the Covid-19 pandemic, the two universities are forerunners in devising innovations in service excellence for academic libraries. Explanatory research with a quantitative methodology was used for this study. Social influence and reuse intent were the variables that differed substantially between the online services of the UB Library and the PTAR UiTM, according to the research conducted on the two libraries' online services. The novel aspect of this research is that a comparative study has been shown between developing countries such as Indonesia and Malaysia regarding the Effect of Online Academic Library Services During the COVID-19 Pandemic on UTAUT3-Based Reusability Interests and Behaviors in undergraduate students. According to this study's findings, the elements that require improvement are student recommendations to use services, particularly at the UB Library, a culture of service use, and innovation in adopting innovative learning methods via online services at the UB Library and PTAR UiTM.

Keywords: Academic Libraries · User Services · COVID-19 Pandemic · Indonesia · Malaysia

1 Introduction

Rapid technological advances have a fundamental role in facilitating, simplifying, and changing people's lifestyles in various ways, such as development in the fields of education, communication, business, and health. Various educational reforms have emphasized adopting and integrating new technologies in the education sector supported by good academic library facilities [1]. As a result of the rapid advances in technology,

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the last few years have seen overall growth in the use of different approaches and the implications of technology that have created a global impact on the delivery of online university services [2]. However, incorporating technological advances in various methods in academic libraries has led to a user-friendly, research-supporting, and flexible learning environment that is a hallmark of the current higher education system in developed countries [3].

Various studies [4–7] have shown the positive impact of technology integration on online services for academic libraries, especially during the COVID-19 pandemic. Therefore, many developed countries, such as the UK, USA, Canada, Australia, and New Zealand, have undertaken various projects to integrate modern advances in information technology into their library service systems [4–6].

One of the various solutions designed for this is the library's online service system, which serves all kinds of academic library resources so that they are right on target users [6, 8]. This online library service provides access 24 h a week to registered library users or academics through an online library portal [3]. In this way, all electronic or digital resources can be accessed in remote locations, offering a flexible service experience off-campus and supported by a conducive atmosphere [9]. The library's online service consists of an integrated arrangement of various hardware and software, which allows the system to be accessed simultaneously from multiple places [3, 10]. This innovation will enable users, especially students, to easily select and sort the variety of library resources as much as they want. Therefore, students no longer need to worry if they are in another place due to the COVID-19 pandemic, a busy class schedule, or unavoidable circumstances.

In addition, online library services can optimize learning outcomes by increasing flexibility to maintain student engagement as active learners. In the last few years, various campuses in Indonesia and abroad, such as Malaysia, have begun to utilize and develop online library services as their distinctive and competitive feature to attract more library users, especially from the academic community. It is important for Indonesia and Malaysia today to understand the adaptation of this system, as acceptance and use of new technologies are a prerequisite for the active participation of end users (Danielson et al., 2014). Most previous studies on library online services have mainly focused on operational and technical issues exploring their access, integration, and implementation [11–13]. Few have explored its acceptance and adoption by users, especially students in different contexts [8, 14]. Therefore, more is needed about acceptance and user behavior in students. Because of the critical role of students as end users of library online services, it is essential to understand the factors that influence the acceptance and use of library online services as a tool for continuous learning [15].

Therefore, this study explores the acceptance and use of online library services among undergraduate students in Indonesia and Malaysia while extending the integrated theory of acceptance and use of technology Venkatesh et al. [16] (UTAUT3), which is used as a theoretical basis. In addition, unlike previous studies [3, 17, 18] conducted in developed countries, this study involved undergraduate students at UB and UiTM, this study aims to attract more undergraduate students by offering world-class facilities and supported by good university governance. Therefore, this study makes a considerable theoretical, contextual, and methodological contribution by extending UTAUT2 to UTAUT3 in the

context of developing countries. Universitas Brawijaya (UB) Library is located in Malang City, Indonesia and Perpustakaan Tun Abdul Razak Universiti Teknologi MARA (PTAR UiTM) in Shah Alam, Malaysia. The location was chosen because UB Library has developed an integrated online service called SSO RemoteXs, then PTAR UiTM named e-resources.

2 Methods

This study employs a quantitative methodology to conduct explanatory research. Explanatory research clarifies the relationship between variables and their causes [19]. The locations planned for this research are the UB Library and the PTAR UiTM. The two universities are innovators in developing outstanding academic library service innovations. Consequently, evaluating the efficacy of the presented user services' influence is necessary, among other methods, using the variables chosen for this study.

The population in this study is all undergraduate students who use SSO RemoteXs, and the PTAR e-resources at least twice. This is because the number of populations is unknown, so this study determines the number of samples using the Roscoe formula [20], namely In multivariate research (including multiple regression analysis), the sample size should be ten times larger than the number of variables in the study so that in the study 10 variables x 10 and the number of samples obtained is 100 people. This study used 104 undergraduate student respondents from Indonesia and 166 from Malaysia. The sampling method in this study was carried out with a purposive sampling approach.

This study uses a data collection method with a survey method using an online questionnaire. The test was used to determine whether the questionnaire used in this study was accurate and worthy of analysis, so a pilot test was conducted to test the questionnaire used by each respondent. The instrument testing technique used is the validity test and reliability test. The hypothesis in this study was analyzed partially using the t-test, while for the model's accuracy using coefficients and termination (R2). Data intervals were used before performing multiple linear regression analysis to simplify calculations using SPSS version 25 software.

3 Findings and Discussion

The comparative test in this study was conducted through the independent samples test method. This method is used because the two samples of the SSO Remote Xs and the PTAR e-resources are unpaired. The decision-making basis is that the two samples are significantly different if the significance is < 0.05. On the other hand, if the significance is > 0.05, the two samples are not significantly different or tend to be the same. Figure 1 shows that a valuable service to help students study for SSO RemoteXs is lower than PTAR e-resources. Meanwhile, PTAR e-resources have the same value. Furthermore, services can help complete tasks better by SSO RemoteXs is lower than PTAR e-resources. At the same time, PTAR e-resources use of services can increase productivity; the average SSO RemoteXs is also lower than PTAR e-resources. PTAR e-resources have services to help get good grades, and SSO RemoteXs is lower than PTAR e-resources.

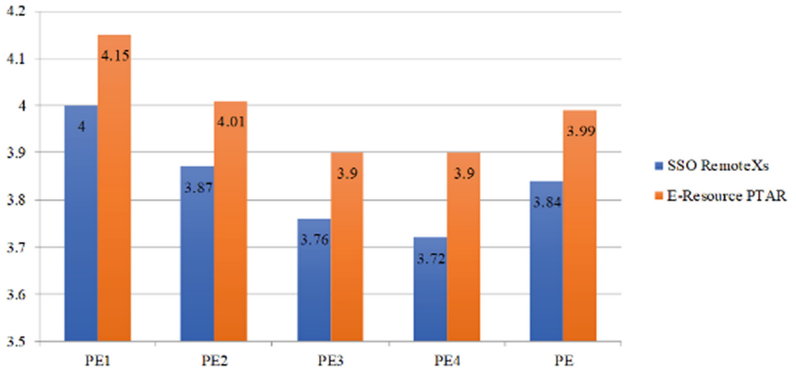

Fig. 1. Average performance expectancy SSO RemoteXs with PTAR e-resources.

It can be seen that the performance in helping students complete assignments and learning, the increase in student productivity due to good performance, the performance in helping students get good grades, and the performance expectancy between SSO RemoteXs and PTAR e-resources are similar. Based on Fig. 2, the ease of interaction with service interactions is higher than PTAR e-resources. Furthermore, the SSO RemoteXs is lower on the easy-are-use service of the PTAR e-resources. In service effectiveness, the SSO RemoteX is higher than the PTAR e-resources. Then on easy-to-understand services feature of the SSO RemoteXs is lower than PTAR e-resources.

It can be seen that the ease of service interaction, the effectiveness, the ease of use of services and understanding of the features, and the effort expectancy between SSO RemoteXs and PTAR e-resources are similar. Based on Fig. 3, a student friend recommended using the service for the SSO RemoteXs is lower than PTAR e-resources. Meanwhile, the librarian recommends using the service of the RemoteXs is lower than that of PTAR e-resources. The lecturer recommends utilizing the service the SSO RemoteXs is higher than the PTAR e-resources. Then on the Universities and/or Faculties that encourage the use of services, the SSO RemoteXs is lower than PTAR e-resources.

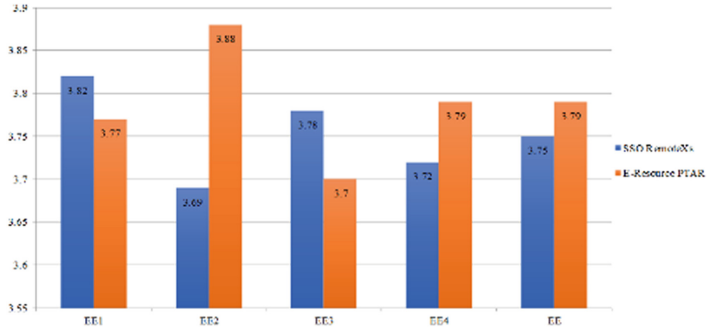

Fig. 2. Average effort expectancy SSO RemoteXs with PTAR e-resources.

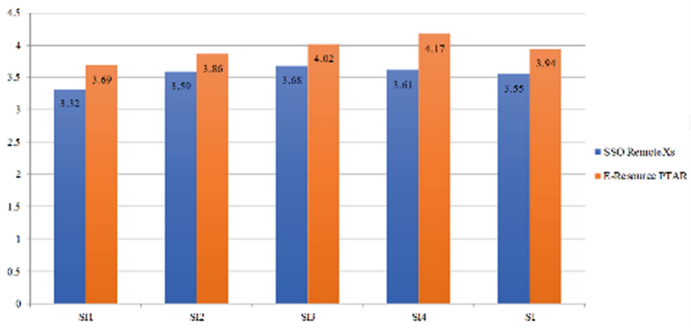

Fig. 3. Average social influence of SSO RemoteXs with PTAR e-resources.

It can be seen that the influence of classmates, lecturers, librarians, faculty, and/or university encouragement and the social influence on service use between SSO RemoteXs and PTAR e-resources are significantly different. Based on Fig. 4, the students have the device to use the service; the SSO RemoteXs are lower than the PTAR e-resources. Meanwhile, the students know how to use the service of the SSO RemoteXs is lower than PTAR e-resources. In the service system compatible with student devices, the average SSO RemoteXs is lower than the PTAR e-resources. Furthermore, on librarian facilitates if students face problems when using the service, the SSO RemoteXs is lower than PTAR e-resources.

It can be seen that the availability of devices by each individual using the service between SSO RemoteXs and PTAR e-resources is significantly different. Furthermore, students' knowledge of using services, the compatibility of service systems with student devices, the librarian's role in facilitating students who have difficulty using the service, and the facilitating conditions between SSO RemoteXs, and PTAR e-resources are not significantly different. Based on Fig. 5, an interesting service for the SSO RemoteXs is the same as the PTAR e-resources. Meanwhile, using services is a fun way to learn; the SSO RemoteXs is lower than the PTAR e-resources. In the services that motivate students to study independently and comfortably, the SSO RemoteXs are lower than PTAR e-resources.

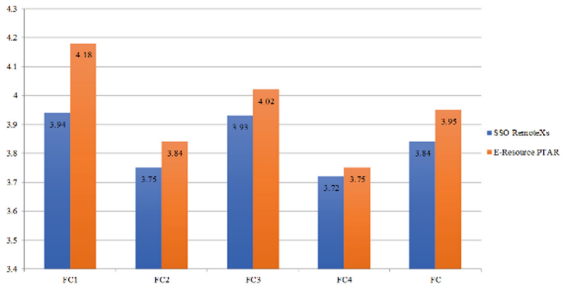

Fig. 4. Average facilitating conditions of SSO RemoteXs with PTAR e-resources.

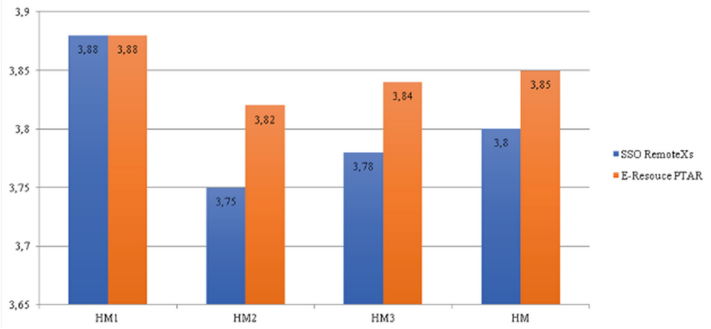

Fig. 5. Hedonic motivations variable.

It can be seen that the motivation to use the service is because it is interesting, the motivation for learning fun and comfortable independent learning through services, and the hedonic motivations between SSO RemoteXs and PTAR e-resources are not significantly different. Based on Fig. 6, services that offer a value that follows the education funds paid for the SSO RemoteXs are lower than PTAR e-resources. Furthermore, the flexibility offered by the service according to the cost of the SSO RemoteXs is lower than the PTAR e-resources.

It can be seen that the cost match with the given value, the cost compatibility with service flexibility, and the price value between SSO RemoteXs and PTAR e-resources are not significantly different. Based on Fig. 7, using lecture references from the service, the SSO RemoteXs is lower than PTAR e-resources. In students who are accustomed to using the service, the SSO Remotares is lower than PTAR e-resources. Then the use of services has become a habit for students; the SSO RemoteXs is lower than PTAR e-resources.

It can be seen that the habit of using lecture references from services, students' habits of using services, the culture of using services, and the habit of using SSO RemoteXs and PTAR e-resources are not significantly different. Based on Fig. 8, students like to experiment with new features and developments in information technology services; the SSO RemoteXs is higher than PTAR e-resources. Furthermore, students are interested

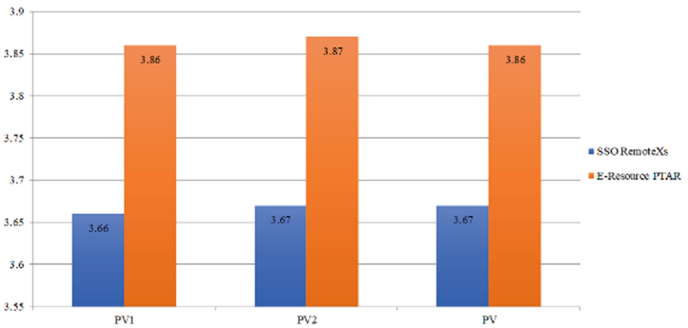

Fig. 6. Average price value of SSO RemoteXs with PTAR e-resources.

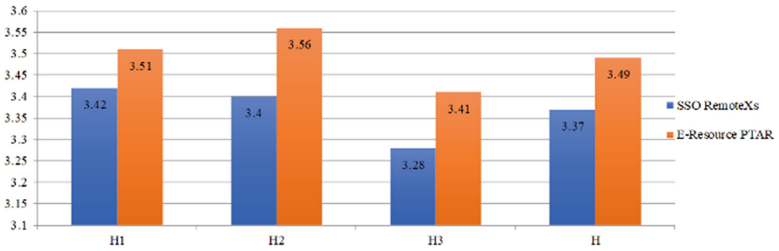

Fig. 7. Average habit of SSO RemoteXs with PTAR e-resources.

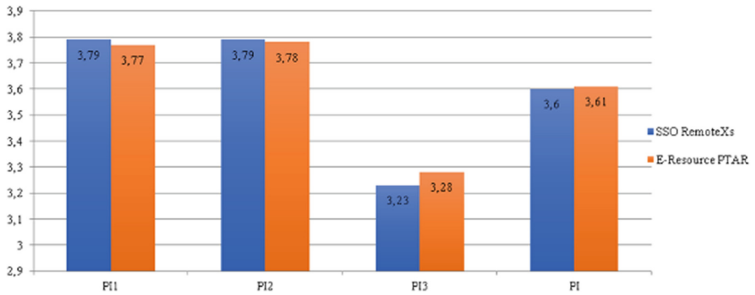

Fig. 8. Average personal innovativeness of SSO RemoteXs with PTAR e-resources.

in trying new features on the service in the SSO RemoteXs is higher than the PTAR e-resources. The individuals are the first to adopt innovative learning methods among their friends for the SSO RemoteXs is lower than the PTAR e-resources.

It can be seen that the preference for experimenting with new features or developments in information technology, students' interest in trying new features, the creativity of students in adopting innovative learning methods, and the personal innovativeness of students in using the services are not significantly different between SSO RemoteXs and PTAR e-resources. Based on Fig. 9, for students who continue using the service in the following semester, the SSO RemoteXs are lower than PTAR e-resources. Furthermore, students will recommend services to their friends; the SSO RemoteXs is lower than PTAR e-resources. Students' positive perception of service in the average SSO RemoteXs is also lower than PTAR e-resources.

It can be seen that the commitment of students to reuse services in the following semester, the commitment to recommend services, the positive perception of students, and the reuse intention of students between SSO RemoteXs and PTAR e-resources are significantly different. Based on Fig. 10, the average reuse behavior of UB students on the SSO RemoteXs is higher than that of UiTM students on the PTAR e-resources. Ten shows that the RB item has a significant value; the reuse behavior of students in services between SSO RemoteXs and PTAR e-resources is not significantly different.

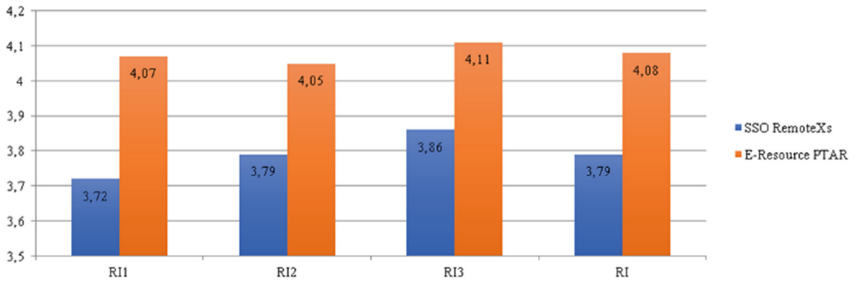

Fig. 9. Average reuse intention of SSO RemoteXs with PTAR e-resources.

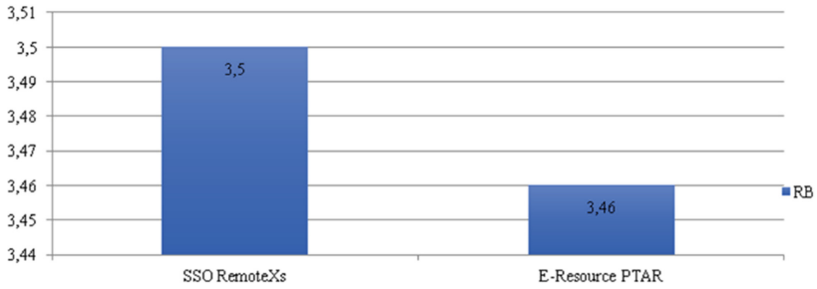

Fig. 10. Average reuse behavior of SSO RemoteXs with PTAR e-resources.

Based on the results of the research that has been done, it can be concluded, as discussed in Table 1.

Social influence and reuse intention are significantly different variables between SSO RemoteXs and PTAR e-resources. The items that need to be improved are providing recommendations for using SSO RemoteXs from friends, habits of using SSO RemoteXs, the culture of using SSO RemoteXs, and innovation in adopting innovative learning methods through SSO RemoteXs and PTAR e-resources.

Table 1. Comparison of SSO RemoteXs with PTAR e-resources.

Variable	SSO RemoteXs	PTAR e-resources
Performance expectancy	Performance in helping students learn is good	Performance in helping students learn is good
	Performance in helping students complete assignments is good	Performance in helping students complete assignments is good
	Good service performance can increase student productivity	Good service performance can increase student productivity

(*continued*)

Table 1. (*continued*)

Variable	SSO RemoteXs	PTAR e-resources
	Good service performance can help students get good grades	Good service performance can help students get good grades
Effort expectancy	Interaction with the service can be done easily	Interaction with the service can be done easily
	Easy-to-use service	Easy-to-use service
	It does not take much effort to use the service	It does not take much effort to use the service
	Easy-to-understand features	Easy-to-understand features
Social influence	Not so many recommendations for using the service from friends	Recommended use of services from friends is quite a lot
	The librarian recommends the use of the service	The librarian recommends the use of the service
	The lecturer gives recommendations to use the service	Lecturers always give recommendations to use the service
	Faculties/Universities encourage the use of services.	Faculties/Universities encourage good use of services.
Facilitating conditions	The availability of devices to use the service for each individual is good.	The availability of devices to use the service on each individual is much better.
	Student knowledge about service usage is good	Student knowledge about service usage is good
	Service system compatible with student devices	Service system compatible with student devices
	Librarians are active in facilitating students who have difficulty using services.	Librarians are active in facilitating students who have difficulty using services.
Hedonic motivations	High usage motivation due to attractive service	High usage motivation due to attractive service
	High usage motivation because learning is more fun through the service	High usage motivation because learning is more fun through the service
	Motivate students to study independently and comfortably	Motivate students to study independently and comfortably

(*continued*)

Table 1. (*continued*)

Variable	SSO RemoteXs	PTAR e-resources
Price value	The service offers value for funds paid	The service offers value for funds paid
	The flexibility offered by the service is following the funds paid	The flexibility offered by the service is following the funds paid
Habit	Students are accustomed to using lecture references through services	Students are accustomed to using lecture references through services
	Not too frequent use of the service	The use of the service has started frequently however needs to be improved.
	The use of services has not become a habit for students	The use of the service has almost become a habit, so it needs to be improved again
Personal innovativeness	Students like to experiment with new features and developments in information technology.	Students like to experiment with new features and developments in information technology.
	Students are interested in trying new features in the service	Students are interested in trying new features in the service
	Innovation in the form of the adoption of innovative learning methods is still not too frequent.	Innovation in the form of the adoption of innovative learning methods is still not too frequent.
Reuse intention	Students are committed to reusing the service in the following semester	Student commitment to reuse services in the next semester is relatively high
	Students are committed to recommending services to their friends	The commitment of students to recommend services to their friends is high
	Students have a positive perception of service	The majority of students always have a positive perception of service
Reuse behavior	Service reuse behavior is high	Service reuse behavior is high

4 Conclusion

Based on the results of this study, it was determined that the Expectancy performance of helping references in completing student lecture assignments was good and that the performance of existing services was able to increase the productivity of students' work, resulting in good lecture grades. Consequently, based on Effort Expectancy, the online library service is straightforward, does not require much effort, and has simple features. From the perspective of the Social Influence of online services, the two libraries have

few recommendations for use from student companions, librarians, and professors who provide the most recommendations.

The Facilitating Conditions of the online services of the two libraries were determined to be that each individual had access to a device capable of using the service, that students had a good understanding of how to use the service, that the service system was compatible with student devices, and that the librarian actively assisted students who had trouble using the service. Hedonistic Motives The online services of the two libraries have a high usage rate because, according to the users, the services are appealing, and the motivation to use them is high because the independent study is more enjoyable with these services. Regarding the Price-Value of online services, both libraries offer flexibility and value commensurate with the amount of money paid. The two libraries accustom students to using online services as lecture references; however, at SSO RemoteXs, students' use of online services is infrequent and has not become routine. While using PTAR e-resources, the use of services has become more frequent; however, it must be improved, as the use of services has become almost a habit and must be enhanced once more.

Personal Innovativeness the online services of both libraries are utilized by undergraduate students who enjoy experimenting and are eager to test new service features. However, innovation in the form of the adoption of innovative learning methods is not yet widespread. The intention of online services at the UB Library is for students to utilize them the following semester; students also recommend these services to their counterparts due to their favorable perceptions. Then, at UiTM, the commitment of students to utilize the service in the following semester is high, the commitment of students to recommend services to colleagues is also high, and the majority of students have a positive perception of the service at all times. Then, in terms of service reuse, both libraries demonstrate a high degree of service reuse. Comparing the online services of the UB Library and PTAR UiTM, social influence and intention to reuse differ significantly. Recommendations from peers to use the services of the UB Library, behaviors of using services, a culture of using services, and innovation in method adoption are the elements that require improvement.

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