

Evaluating University Library Websites in Indonesia and Malaysia

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Abstract. This study aims at evaluating university library websites based on users' perceptions using the AttrakDiff questionnaire. Data were collected from 40 university library websites in Indonesia and Malaysia. The results show no significant difference in the value of user's experience interacting with public and private university library websites in Indonesia and Malaysia. The user experiences interacting with public university library websites in Indonesia and Malaysia have been valued higher than with private university library websites. Public university library websites offer a relatively high value of pragmatic experience, but not enough to drive the user to identify with the libraries. Nevertheless, there is much room for improvement for private university libraries to offer more positive users experiences. Further study is recommended to expand the number of users and complement the analysis with qualitative analysis to provide a more holistic evaluation.

Keywords: AttrakDiff; Digital Library; Indonesia; Malaysia

1 Introduction

Library has played a distinctive role in a higher education institution. In its traditional form, a library assists users in accessing and retrieving information from various resources materials. Within the higher education community, a library assists lecturers in providing learning resources for their courses and research resources for their research and community services endeavors. Meanwhile, a library also helps to provide students as rich as possible learning resources to support their learning journey. In recent days, the proliferation of information technology has had an important impact on the library, leading to the emergence of digital libraries. Digital library services promise efficiency – timeliness, ease of use, anytime and anywhere available services. It also offers an effective value of library services using a digital search engine that delivers information based on users' needs. The most observed characteristic of a digital library system is that distant end-users can effectively and effortlessly retrieve it through the networks.

In recent years, a digital library has been widely an integrated feature of higher education institutions worldwide. Digital library has significant role in providing services to cover up-to-date information resource supply for research activities and teaching and learning resources to support the teaching process [1]. The digital libraries also support students by providing

access to vast and rich digital learning resources and other services without time and geographical restrictions. The services range from digital collections, electronic databases, and library tutorials [2]. As users use a digital library, they will create presumptions regarding the services [3]. Since most university library website users are digital natives, they have their own digital expectations concerning the library website [4]. When users interact with the library website as the gateway to the library collections and other services, they will appraise the digital library website with a modern-looking website in their frame of mind. The users would believe that a futuristic-looking website is more vigorous and expectedly will provide better services and more reliable information content.

As university library websites are the main door for users to access library resources and services [5], the university library websites should be designed to attract users and offer effortless access to needed and related information through the website [6]. However, university library websites and access to online library services are mostly designed based on the system, management, or technology perspectives, with no consideration for the users' views. Thus, many users may not feel at ease or familiar with the library website and prefer to utilize other available online resources, such as google search. Further, users may develop negative perceptions toward the library website. As a result, the use of digital library services is relatively low, which becomes a serious concern to university management. Research on user experience [7] usually explores the relationships between usefulness, symbolic, and aesthetic value of users' experience when interacting with products. Such personal experience and perceived usefulness of library websites had the highest impact on users' satisfaction in digital library usage [8]. Further, user experience in interacting with a library website is essential for measuring the usefulness of a digital library, especially in higher education institutions.

The study aims to evaluate the university library websites based on the user's perceptions when interacting with the library website. The user in this study is a university student, and the product is the digital university library website of public and private universities in Indonesia and Malaysia. User perception in this study is measured using indicators of users/human interaction with the digital university library websites, to include pragmatic quality, hedonic quality, and attractiveness. To better understand users' perceptions while interacting with the digital library websites, this study employs the AttrakDiff questionnaire, which allows assessment of the pragmatic quality, the hedonic quality, and the attractiveness of the digital library website. The three dimensions of pragmatic quality, hedonic quality, and attractiveness were categorized into four intertwining subdimensions that focused on the user's experience with the university digital library website, i.e., attractiveness, hedonic quality-identification, hedonic quality-stimulation, and pragmatic quality [9].

2 Literature Review

Many studies have been done, and many tools have been developed to measure users' experience [10] in interacting with digital library websites. However, user experience research is considered a new paradigm of evaluative research regarding service quality in a library. UX research focuses on humans and feelings – the subjective side of product use or evaluative feeling (good-bad) while interacting with a product or service (hedonic quality), and the pragmatic quality of a product [11], instead of evaluating the product or materials of the library (content, function, presentation, etc.). User experience is a temporal phenomenon, present-oriented and changing over time. According to Hassenzahl [12], this positive or

negative user experience has on a particular product is central to the decision of going on or quitting the product. There have been three most acknowledged standardized questionnaires for UX evaluation: UEQ, mCUE, and AttrakDiff [13]. This study mainly uses the AttrakDiff questionnaire to evaluate university library websites based on users' perceptions.

AttrakDiff questionnaire was developed by Hassenzahl, Burmester, and Koller in 2003 to assess the perceived pragmatic quality, the hedonic quality, and the attractiveness of the interactive digital product. The questionnaire consists of 28 items using a 7-point semantic differential to be marked by the user [14]. There are 28 items representing the three dimensions were then categorized into four subdimensions: Pragmatic Quality (PQ), Hedonic—Identity Quality (HQ-I), Hedonic—Stimulation Quality (HQ-S), and Attractiveness (ATT) [15]. Pragmatic quality (PQ) is a particular trait whereby a product is confusing, predictable, complicated, or simple [16]. In contrast, hedonistic characteristics (HQ-I and HQ-S) are those that attract emotions whereby a product is exciting or boring, disappointing, or novel, related to stimulus traits, and also to recognition and invocation traits, such as the capability of a product to be attached to users, rather than to segregate. Meanwhile, attractiveness (ATT) is defined as a whole value of the product on the basis of pragmatic and hedonic qualities perception [17]. Existing literature also values the AttrakDiff questionnaire highly as an evaluation tool for users to assess library websites [18] as follows:

- a. AttrakDiff brings a proven and verified methodology as it has been employed in many types of study,
- b. AttrakDiff helps designers or developers not only to perceive user experience (UX) on a particular level (word pair appraisals) but also on the grounds of various groups of grades (pragmatic, hedonic, attractiveness),
- c. AttrakDiff also measures the user's feelings using a questionnaire and elicits quantitative data.

There have been rigorous works using AttrakDiff to evaluate online library service, especially measuring users' experience using university library websites [19]. AttrakDiff questionnaire has been proven a well-recognized UX evaluation method used for a broad scope of products [20]. Also, it can tap the pragmatic attributes that are crucial for users' goodness assessments of the product. Users' participation in evaluating the library website is very strategic in confirming the role of the library website as the entry gate to digital resources for learning, teaching, and research [21]. It also re-emphasized that library website needs to be designed using user-centered design (UCD), which integrates ideologies and interpretations, among others, from the domains of user experience (UX) [22]. The foundation of a user-centered library website design is the user's perception, which can be tapped by the AttrakDiff questionnaire employed in this study.

3 Research Questions

This study evaluated university library websites based on users' perceptions using the AttrakDiff questionnaire. The question in this study is how the user perceives library websites in terms of their pragmatic quality, hedonic quality, and attractiveness? Will there be differences in users' experience in interacting with Indonesian and Malaysian university library websites? The results of this study, i.e., the user perception of the library website, expectedly will provide information on how the library website and its services can redesign itself to provide students as users with a positive experience.

4 Research Method

4.1 Design

This study is an evaluative UX study focusing on evaluating university library websites in Indonesia and Malaysia based on user's perception tapped using the AttrakDiff questionnaire. The user in this study is the researcher himself – only one user – who assessed each library website using the AttrakDiff questionnaire for six consecutive weeks (42 days). The design can be seen as follows in Table 1.

Table 1. Design of the Study

AttrakDiff Dimension	Indonesia University Library Websites		Malaysia University Library Websites	
	Public	Private	Public	Private
ATT	ATT-PB-IND	ATT-PV-IND	ATT-PB-MY	ATT-PV-MY
HQ-I	HQI-PB-IND	HQI-PV-IND	HQI-PB-MY	HQI-PV-MY
HQ-S	HQS-PB-IND	HQS-PV-IND	HQS-PB-MY	HQS-PV-MY
PQ	PQ-PB-IND	PQ-PV-IND	PQ-PB-MY	PQ-PV-MY

The library website being evaluated consists of 20 library websites in public and private higher education institutions in Indonesia and 20 library websites in public and private higher education institutions in Malaysia.

4.2 Data Collection

Data for this study has been collected using the AttrakDiff questionnaire consisting of four dimensions and 28 subdimensions from 20 Higher Education Institutions/HEIs in Indonesia and Malaysia by a single user for six consecutive weeks. The universities in Indonesia were selected based on the list of university clusters issued by the Ministry of Education and Culture of Indonesia (2020). The top 10 public and top 10 private universities were selected based on the assumption that they all have implemented a digital library system (Table 2).

Table 2. HEIs from Indonesia

No.	Indonesia	
	Public Universities	Private Universities
1.	Institut Teknologi Bandung	Universitas Telkom
2.	Universitas Gadjah Mada	Universitas Muhammadiyah
3.	Institut Pertanian Bogor	Universitas Bina Nusantara
4.	Institut Teknologi Sepuluh Nopember	Universitas Mercu Buana
5.	Universitas Indonesia	Universitas Islam Indonesia
6.	Universitas Diponegoro	Universitas Pasundan
7.	Universitas Airlangga	Universitas Gunadarma
8.	Universitas Hasanuddin	Universitas Atma Jaya
9.	Universitas Brawijaya	Universitas Esa Unggul
10.	Universitas Padjadjaran	Universitas Kristen Petra

The selection of universities in Malaysia was carried out using the 4icu.org website that provided the Top 100 Best University list in Malaysia. Then the universities were shortlisted for 10 top public universities and 10 top private universities as follows (Table 3).

Table 3. Universities in Malaysia

No.	Malaysia	
	Public Universities	Private Universities
1.	Universiti Malaya	Monash University
2.	Universiti Tunku Abdul Rahman	University of Nottingham Malaysia
3.	Universiti Kebangsaan Malaysia	Swinburne University of Technology
4.	Universiti Malaysia Perlis	Taylor's University
5.	Universiti Putra Malaysia	Sunway University
6.	Universiti Sains Malaysia	Asia Pacific University (APU)
7.	Universiti Teknologi Malaysia	INTI International University
8.	Universiti Teknologi Petronas	SEGi University
9.	Universiti Tenaga Nasional (UNITEN)	HELP University
10.	Universiti Teknologi MARA	Multimedia University

4.3 Data Analysis

Data collected in this study illustrate a single user's perception when interacting with university library websites in Indonesia and Malaysia for 42 days. The user's assessment on the university library websites consists of information on a 7-point semantic differential scale of positive-negative of four subdimensions: Pragmatic Quality (PQ), Hedonic-Identity Quality (HQ-I), Hedonic-Stimulation Quality (HQ-S), and Attractiveness (ATT) of the university library websites. The reliability analysis of the AttrakDiff questionnaire showed that the instrument is highly reliable for the study, with a reliability index ranging from 0.683 (PQ); 0.738 (HQ-I); 0.740 (HQ-S); and 0.730 (ATT).

From 20 HEIs in Indonesia and 20 HEIs in Malaysia, the data obtained is $n=6.720$ units of analysis from $[(6 \text{ weeks of evaluation} \times 7 \text{ days}) \times 40 \text{ HEIs}] \times 4 \text{ subdimensions} = 6.720$ units of analysis. The unit of analysis is the subdimension of the AttrakDiff questionnaire, i.e., Pragmatic Quality (PQ), Hedonic-identity quality (HQ-I), Hedonic-stimulation quality (HQ-S), and Attractiveness (ATT), as they are considered to be the distinctive factor to the user's experience with each library website. Data were analyzed quantitatively to illustrate the difference between Indonesian public universities, Indonesian private universities, Malaysian public universities, and Malaysian private universities. An independent t-test was conducted for each subdimension of the AttrakDiff questionnaire (PQ, HQ-I, HQ-S, and ATT) to find differences between groups of Indonesian public and private universities, Malaysian public and private universities.

5 Results and Discussion

The general result of this study shows that, overall, there is no significant difference in the student's experiences in interacting with the digital university library websites from the public and private universities in Indonesia and Malaysia. Nevertheless, looking at the results more closely, it is clear that there are qualitative differences, as depicted in Table 4. Table 4 indicates that the student's experiences interacting with public university library websites are relatively higher than with private university library websites in both countries. However, the interaction experiences with university library websites in Malaysian universities are somewhat higher than in Indonesian universities.

Table 4. Means among groups of universities in Indonesia and Malaysia

AttrakDiff Dimension	Indonesia		Malaysia	
	Digital Library Websites		Digital Library Websites	
	Public Institutions (n=10, mean=)	Private Institutions (n=10, mean=)	Public Institutions (n=10, mean=)	Private Institutions (n=10, mean=)
Attractiveness	5.1714	4.8333	5.3881	4.9548
Hedonic-identity quality	4.7857	4.3881	4.9500	4.7571
Hedonic-stimulation quality	4.5976	4.3000	4.6810	4.5383
Pragmatic Quality	4.6786	4.3452	4.6762	4.4786

Table 4 indicates that the attractiveness of public university library websites is relatively higher than the private universities in both countries. However, all attractiveness is somewhat higher than other subdimensions. This attractiveness indicates a whole value of the library website on the basis of pragmatic and hedonic qualities perception [23]. Meanwhile, the hedonistic characteristics (HQ-I and HQ-S) indicate user’s emotions whether a library website is exciting or boring, disappointing, or novel [24], as related to stimulus traits, and also to recognition and invocation traits, such as the capability of the library website to be attached to the user. Thus, although the university library websites were perceived as relatively attractive, the library websites were considered not giving a hedonic experience to the user.

In this case, hedonic experience includes the quality of hedonic identity, which means the user could not attach himself as belonging to or identify himself to the university library website, or the quality of hedonic-stimulation, which means the user was not stimulated to use the university library website because it is considered boring or disappointing. Both means for Hedonic-Identity Quality (HQ-I) and Hedonic-Stimulation Quality (HQ-S) are positive but relatively low, as they did not reach the highest possible measure. This low hedonic quality of the university library websites might have been caused by the low pragmatic quality of university library websites in both countries. Pragmatic Quality (PQ), is a particular trait whereby a library website is confusing, predictable, complicated, or not simple [25]. Thus, low pragmatic quality indicates that the usefulness of the university library websites is perceived to be low; the user might experience difficulties or problematic situations, or unpleasantness when interacting with the university library websites. The library websites might be perceived as confusing, complicated, and not simple to use. Figure 1 illustrates the detailed value the user gave when interacting with university library websites in Indonesia.

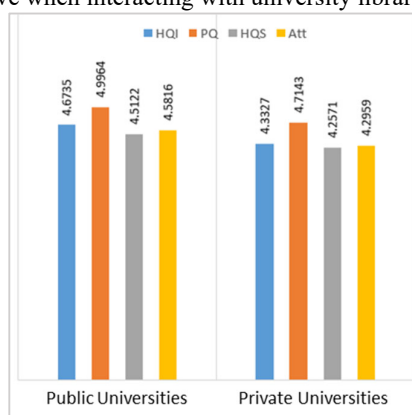


Fig. 1. User Experience interacting with university library websites in Indonesia

If seven is the highest nominal value of the experience, the user valued his experience interacting with university library websites in Indonesia for a range of 61% up to 71% of positive experience. The lowest experience value has been the Hedonic-Stimulation Quality (HQ-S) with private university library websites, and the highest has been Pragmatic quality (PQ) with public university library websites. Thus, the public university library websites were perceived to be useful, although not attractive or stimulating the user's identification with the library. As for private university library websites, the user did not perceive that he was highly stimulated to attach himself to the library. Thus, HQ-S was the lowest value of his experience, although he still valued the private university websites' Pragmatic Quality (PQ) relatively positively. The user experience interacting with university library websites in Indonesia indicates that he was experiencing fewer difficulties or problems. Still, he did not perceive them as attractive nor highly valued for attachment or identity. His perceived value is relatively higher for public university library websites than private university library websites. Figure 2 illustrates the user experience interacting with university library websites in Malaysia. The user valued his experience interacting with university library websites in Indonesia for a range of 63% up to 74% of positive experience.

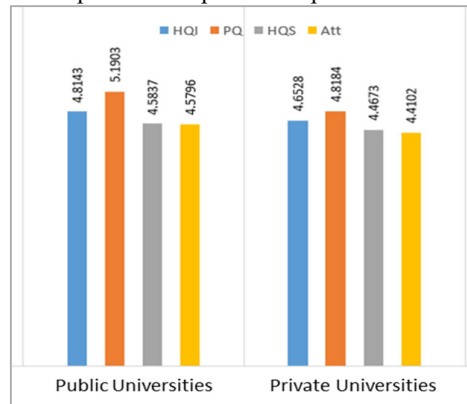


Fig. 2. User Experience interacting with university library websites in Malaysia

Figure 2 indicates that the lowest value of the user experience has been the Attractiveness (ATT) of private university library websites in Malaysia. The highest value has been the Pragmatic Quality (PQ) of Malaysia's public university library websites. In general, the user valued his experience interacting with public university library websites relatively higher than with private university library websites in Malaysia. The perceived value of the overall experience interacting with private library websites in Malaysia is relatively low. Those reported user experiences are relatively similar to the findings by Jabeen & Ganaie (2019), which illustrate that the library website of their university has been considered far from the expectations and needs of the users. Thus, improvement is needed, and administration and designers need to pay more attention to the website to fulfill users' expectations [26]. Overall, both experiences interacting with public university library websites in Indonesia and Malaysia have been valued higher than the experiences with private university library websites. Public university library websites in both countries offer a relatively high value of pragmatic experience, but not high enough to drive the user to attach to or identify himself with the libraries. As far as private university library websites, there is much room for improvement to offer a more positive experience for users.

The results of this study re-echo the need for user-centered library websites as mentioned by Nyame, Lu, and Fu (2019)[27]. The relatively low value of the user experience interacting with university library websites indicates that the websites were considered not useful, and most probably what has been provided through the websites did not match users' perception. Since each library website has its own unique user group, it is essential to identify users' perceptions to evaluate and develop a useful website that reflects a positive user experience. As a user experience study, this study provides information about the user experiences in interacting with university library websites in Indonesia and Malaysia. The user experiences indicate the value of utilization of university library websites, whether the experience has been positive or negative as users conduct an inquiry, retrieve information, browse, and utilize information through the university library website.

6 Conclusion

This study is the researcher's attempt to evaluate university library websites from the user's perspective. User experience was tapped using the AttrakDiff questionnaire to illustrate the four subdimensions of the experience, i.e., Pragmatic Quality (PQ), Hedonic—Identity Quality (HQ-I), Hedonic—Stimulation Quality (HQ-S), and Attractiveness (ATT). The results indicate that there is much room for improvement, in both public and private university libraries in Indonesia and Malaysia, in terms of their library websites. It is highly essential for university management to carry out such improvement, since library websites serve as the gateway for users to use online library services, especially when teaching and learning in universities are delivered online during the Pandemic time.

This research provided insights into how to evaluate digital library websites and services based on the user's perception. It is clear that the AttrakDiff questionnaire effectively depicts user experience interacting with university library websites – both public and private library websites – in Indonesia and Malaysia. Nevertheless, this study has been based on a single-user experience. To increase its meaningfulness, it is recommended to expand the number of users and conduct the data collection at various different times. Expectedly the latter will provide more information for the university libraries to improve their websites and services. Although comparing two different university categories in Indonesia and Malaysia, this research does not portray a holistic evaluation of digital library services. It focused on evaluating the library websites. More studies focusing on various aspects of digital libraries are needed to achieve a holistic perspective on university digital libraries. Furthermore, a combination of quantitative and qualitative analysis of the users' experience may provide more comprehensive and beneficial results.

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