THE ENGAGEMENT OF NON-DIGITAL LIBRARY RESOURCES AMONG UNDERGRADUATE STUDENTS OF SCHOOL OF INFORMATION SCIENCE, COLLEGE OF COMPUTING, INFORMATICS, AND MEDIA, UNIVERSITI TEKNOLOGI MARA (UITM)

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Abstract: *This research paper investigates the engagement of non-digital library resources among undergraduate students of School of Information Science, College of Computing, Informatics and Media, Universiti Teknologi Mara (UiTM). Information technology has changed the way of teaching and learning in higher learning institution that has make non-digital library resources are quickly becoming significant component. The objective of this study is to investigate on the engagement of non- digital library (non-DL) resources, along with its several factors of reliability, assurance, tangible, empathy, responsiveness, and level of satisfaction among the users that influence their engagement with non-DL resources based on the conceptual framework of SERVQUAL's model. To achieve the objectives, a comprehensive literature review is conducted to identify relevant studies on the topic from various disciplines, including education, digital library, open access resources and technology, to gain a multidimensional understanding of the subject matter along with quantitative methodology of study to collect primary data. The finding of the study has unveiled substantial gaps in the existing literature regarding the lack of recent research on non-DL resources, especially in the aspect of engagement among the users. There is also noticeable gap in research pertaining to the reliability, quality, sustainability, and business models of non-DL resources. Further research is needed to explore the user's engagement with non-DL resources using suitable model, thorough study to develop effective quality control measures, and publishing models, alongside with the effort to provide exhaustive information and awareness regarding copyright law and regulations in order to advance knowledge, inform practice, and give major positive impact to the field in the future.*

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Introduction

The advancements in information technology have drastically altered the methods of information collection, storage, retrieval, and distribution. In the past, textbooks, periodicals, handbooks, printed journals, and other printed materials were used for research, teaching, and learning. As a consequence of the development of technology, the implementation and use of online resources have emerged, resulting in a significant shift in library services and access to information resources, and the emergence of the digital library. Libraries are redesigning their services and information products to increase the value of their offerings and to meet the evolving information requirements of their user communities. Digital libraries come in many forms attempting to provide instant access to digitized information and consist of a variety of information, including multimedia (Mayank Trivedi, 2010).

Witten, I. H., Bainbridge, D., and Nichols, D. M. (2006) stated that the digital library is identical to the traditional library with the exception of its digitalized materials. In addition, they elucidate on the definition of DL, which can be characterized as (a) A library that encodes journals, books, and information in a digital format. (b) A compilation of encoded texts, images, etc. that can be stored, retrieved, and read by a computer. (c) A collection of digital representations of information content, as well as the hardware, software, and personnel necessary to support the functions of a traditional library in addition to knowledge worker operations such as searching, perusing, and navigation. (d) Integrated collection of services for capturing, cataloging, storing, searching, safeguarding, and retrieving information. (e) Collection of a very large number of digital objects, including all categories of content and media, stored in distributed information repositories and accessible via national computer networks. (f) A large collection of information that has been digitally preserved. A digital library may contain documents, images, audio, and information on current events. (g) Digital libraries may include Web-accessible reference materials and resources. In a digital library, it is also possible to include digitized portions of a library's collection or original web-based content.

According to Irsa Arma Perdana (2020), a digital library is a library that holds information in digital form or the fulfillment of information requirements in digital form from external information sources to be distributed to both registered customers and the general public. In institutions of higher education, the library is considered part of the infrastructure of schools, universities, and other educational institutions. The library is one of the most essential university facilities; therefore, the digitization of the library will support university teaching and learning activities.

In the context of Malaysia, according to Huck-Tee Lim (1980), the digital library (DL) was initiated in 1978 by a number of government initiatives, including the "Malaysian Machine-Readable Catalogue" (MALMARC, 1979) project, a Malaysian research library network. As in many developing nations, university libraries in Malaysia are significantly more advanced than school, special, and public libraries. In many disciplines of librarianship, including the field of computerization from which the digital library arose, university libraries have dominated the field. Based on the context of UiTM's digital library (DL), the resources provided by Perpustakaan Tun Abdul Razak (PTAR)'s DL are in the form of E-Books, E-

Journal, subscribed online database, institutional and research repository, local content, theses full text, etc. that specially subscribed and provided by the library to all of the users in the institution through its official website (PTAR, 2023).

Over the past decade, research and development in the field of digital libraries (DL) has expanded substantially, and many operational digital libraries now exist (Sudatta Chowdhury et al., 2006). However, the development of technology has made Human computer interaction (HCI) has shifted from simplified user interfaces to more interactive and engaging experiences as a result of the digital revolution of the past few decades, and the digital library has been affected (Triparna de Vreede et al., 2019). Despite all the past literatures that have focused on DL, there are lack of recent studies that have specifically mentioned or focused on non-DL engagement.

The Context of Non-Digital Library Resources and Its Engagement Among the Users User Engagement

Engagement is a crucial phenomenon of interest across many disciplines and application domains, and it has been demonstrated to result in positive outcomes such as improved learning, task performance, and job satisfaction (Triparna de Vreede et al., 2019). According to Masrek and Samadi (2017), user engagement is influenced by users' attitudes toward systems (e.g., usability, aesthetic appeal) and concentrates on individual users' thoughts, feelings, and activity level during system use. User engagement in the context of information searching is not only a process of retrieval, but also a process of sense or meaning construction, in which users make sense of their current circumstance with knowledge, ideas, opinions, or effective interactions (Masrek and Samadi, 2017).

The wide definition of engagement however can be seen in a few concepts such as usage, behavioral and psychology. User engagement can be partially equated with usage, but it extends far beyond that. According to the Cambridge Dictionary, usage is defined essentially as the manner in which something is treated or utilized, its use, the manner or process of utilizing something, and the amount of something used, such as energy, internet time, etc. Mark A. Griffin (2008) defined the concept of behavioral in engagement as "adaptive behavior meant to serve an organizational purpose, whether to defend and protect the status quo in response to actual or anticipated threats or to change and/or promote change in response to actual or anticipated events." Triparna de Vreede et al. (2019) define behavioral engagement as the extent to which individuals can be observed exerting effort and demonstrating persistence in order to remain involved in an activity or situation. Schaufeli (2013) asserted, based on the concept of psychology in engagement, that the physical-energetic (vigor), emotional (dedication), and cognitive (absorption) components comprise this dimension of engagement. Further, Triparna de Vreede et al. (2019) defined psychology engagement as the extent to which individuals experience a positive psychological reaction or attachment to a particular activity, initiative, or circumstance. In the academic setting, the emotive dimension of engagement was measured in terms of positive affective reactions to the academic experience, such as happiness, interest, and excitement.

Non-Digital Library Resources

Open access resources (OAR) and non-digital library resources (non-DL resources) are essentially synonymous terms that refer to the same entity. Ishfaq et al. (2022) define non-DL resources as an open access movement that seeks unrestricted and open online access to academic information such as publications and research data. Open access is when anyone can

read, download, copy, distribute, print, search for and within the information, or use it for educational purposes or other purposes. Ishfaq et al., (2022) also cited the Budapest Open Access Initiative's (2002) definition of non- DL resources as "free availability on the public internet, allowing any user to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inherent to gaining access."

With increased technological advancement and the Internet facilities, the degree of using and surfing online resources for obtaining information is steadily increased. In this age of information and communication technologies, the Web has become the central place to access and read electronic contents. Information technology has changed the way of teaching and learning in academia that has make open access resources are quickly becoming significant components in higher education (Hafiz Muhammad Adil,2022). Gunasekaran and Perumal (2022) provided examples of non-DL resources including the Directory of Open Access Journals (DOAJ), Open Access Scholarly Source Book (OASIS), Research Gate, Academia.edu, Open Springer, Google Scholar, etc.

The Benefits and Challenges of Non-DL Resources Benefits of Non-DL Resources
The advent of non-DL resources has ushered in a new era, revolutionizing the way users' access and share knowledge. There are myriad benefits of non-DL resources, shedding light on how it empowers individuals, enhance collaboration, and foster innovation, especially in aiding learning and teaching environment. Krelja Kurelovic (2016) stated that the benefits of open resources are based on its free and accessible education, access to knowledge as public good, culture of participation, collaboration and sharing, open access to scientific information, and creation of a knowledge society. Henderson and Ostashewski (2018) said that open access resources are beneficials as it becomes scaffolding for inexperienced educators, increased number of educational materials on the internet, supports lifelong learning, and provides an environment where courses can be controlled.

Wright et al. (2019) added that non-DL resources are easily accessible, affordable, good quality, creativity and flexibility, cost-effective, customizable, accurate and current, accessibility, adaptability, and its availability on the internet. Kumar et al. (2021) stated that it can enhance university reputation, enhance the users' knowledge of a subject, enhance the users' knowledge of a course, support students without formal access to higher education, share best practices, reduce development costs/time, enhance current practice, support developing nations, gaining access to the best possible resources, bringing down costs for learners, outreach to disadvantages communities, becoming independent from publishers, building sustainable partnerships, and creating more flexible material.

Challenges of Non-DL Resources
While open access resources hold immense potential for democratizing information and accelerating the learning and teaching process, they also present several challenges that can be addressed throughout its implementation. Hassall and Lewis (2017) addressed its challenges as lack of awareness, no capacity to identify suitable open resources, limited support from institutions, lack of overarching support, and lack of time. Ganapathi (2018) stated that it's also challenging due to lack of technology knowledge, language, illiteracy, poor accessibility, diversity, inequity, lack of sufficient distribution channels, lack of teacher training and teacher-centred education. Wright et al. (2019) in their research found out the issues with licensing and

copyright, hosting platforms, lack of acceptance, lack of awareness, time-consuming, challenging to integrate, quality of the material, and many times links are non-functional were those challenges encountered while using non-DL resources.

Alkhasawneh (2020) added the list by stating quite same issues such as lack of required hardware, lack of technical infrastructure, lack of willingness to share material, lack of technical skills, no policy for publishing/sharing, plagiarism problem, copyright issue, and lack of incentives. Kumar et al. (2021) in their study had concluded the challenges as scepticism over usefulness, lack of reward and recognition, possible negative impact on reputation, lack of feedback from users, lack of interest in pedagogical, and no support from management level.

Methodology

The research will employ a quantitative research design to investigate the engagement of non-DL resources among the targeted audience. The study aimed to explore the following research questions: (1) what are the level of engagement with non-digital library resources among undergraduate students of UiTM? (2) What are the interrelationships between reliability, assurance, tangible, empathy, and responsiveness with the engagement of non-digital library resources among undergraduate students of UiTM? (3) What are the relationships between the engagements of non- digital library resources with satisfaction level among undergraduate students of UiTM? The participants will consist of all undergraduate students from School of Information Science, College of Computing, Informatics and Media, Universiti Teknologi MARA (UiTM) from six (6) out of 13 branches of UiTM in Malaysia.

This study refers to the conceptual framework of SERVQUAL model introduced by Parasuraman, et al., (1985) that is more concerned with measuring service quality, which is an important step that must be taken to comprehend how it can relate to the effectiveness of the service provided and lead to customer satisfaction (Kaliannan et al., 2014). In the context of libraries, SERVQUAL concentrates on the actual experience users have with library services, as opposed to what the library produces for users (Yu et al., 2007). This service quality being measured with SERVQUAL model that being compressed into five dimensions by Parasuraman, et al., (1985); reliability, assurance, tangibles, empathy, and responsiveness (RATER), briefly defined as below along with conceptual model of it.

a) Reliability: Ability to perform the promised service dependably and accurately
b) Assurance: Knowledge and courtesy of employees and their ability to convey trust and confidence
c) Tangibles: The appearance of physical facilities, equipment, personnel, and communication materials
d) Empathy: Caring, individualized attention the firm provides its customers. It also includes access to the organization's representatives, communication and understanding the customer.
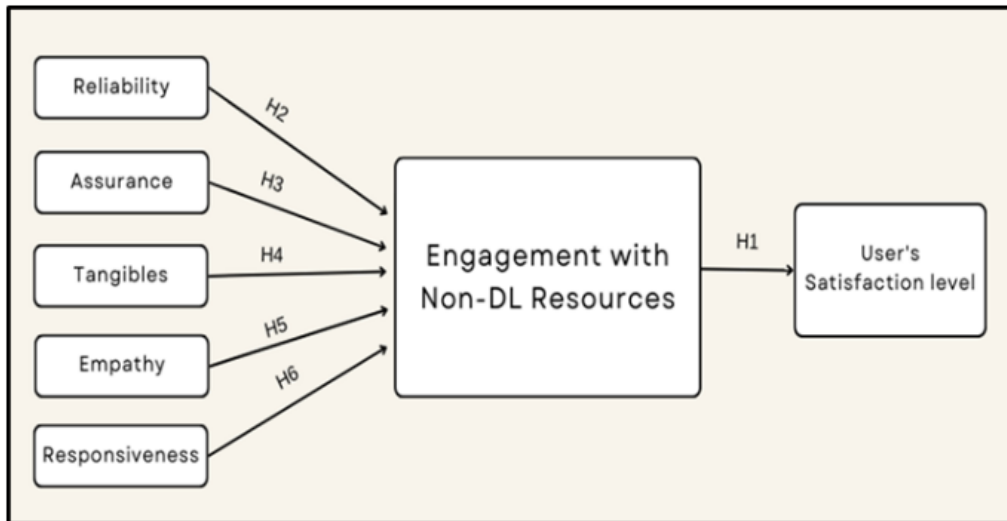e) Responsiveness: The willingness to help customers and provide prompt service

Figure 1: Proposed Conceptual Framework

According to Yu, et al., (2007), SERVQUAL was introduced to the library world at a time when librarians began to heed context-dependent assessment focuses on users' actual experience with the library service rather than what the library produces for users. This service quality being measured with SERVQUAL model that being compressed into five dimensions by Parasuraman, et al., (1985); reliability, assurance, tangibles, empathy, and responsiveness (RATER), briefly defined as below along with conceptual model of it.

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User's Engagement and Satisfaction Level with Non-DL Resources
User engagement in digital libraries encompasses cognitive, emotive, and behavioral aspects of the user experience. It goes beyond mere usability and involves a psychological state that leads to frequent interactions with digital library resources. On the other hand, satisfaction relates to the belief that a positive experience will evoke positive emotions. The study by Nima Soltani-Nejad et al. (2020) suggests that positive emotions arising from cognitive, emotional, and behavioral experiences when using digital library information and services contribute to increased user interactions with these resources. Therefore, it can be hypothesized that:

H1: Engagement with non-DL resources has a significant and positive relationship with user satisfaction.

Reliability
Reliability in the context of digital libraries refers to the ability to consistently provide users with the promised services or resources in a dependable and accurate manner, meeting their expectations. The dependability of service delivery can be influenced by factors like internet access and the availability of resources. In the case of non-digital library open resources, digital

files can be stored and delivered in various ways, allowing for quick browsing, easy access from multiple locations, and simultaneous searching, as mentioned by Chepukaka and Kirugi (2019). Research by Wang and Shieh (2006) found a strong correlation between certain elements of reliability and user satisfaction. Factors such as internet access and resource availability can impact the dependability of service delivery, and elements within reliability, such as timeliness and accuracy, have a significant influence on user satisfaction. Therefore, it can be hypothesized that:

H2: Reliability has a significant and positive relationship with engagement of non-DL resources.

Assurance

Assurance, according to Parasuraman et al. (1985), refers to the knowledge, etiquette, and ability of employees to instill trust and confidence in users. Maniam Kaliannan (2014) emphasizes that assurance involves the service provider's civility, respect, consideration, and effective communication with users. A study by Omar, Mohd Salleh, and Arshad (2021) found that assurance has a significant and positive impact on student satisfaction. Participants in their research acknowledged that staff members were pleasant, approachable, accommodating, and knowledgeable about the services offered. These factors contributed to user satisfaction. In line with this, Nima Soltani-Nejad et al. (2020) state that satisfied users experience positive emotions when using digital library services. Satisfied users, in turn, experience positive emotions and engage more with digital library resources. Therefore, it can be hypothesized that:

H3: Assurance has a significant and positive relationship with engagement of non-DL resources.

Tangibles

Physical facilities, apparatus, personnel, and communication materials are examples of tangible dimensions (Parasuraman et al., 1985). The facilitating conditions factor refers to the availability of adequate resources and assistance for technology consumers. Facilitating conditions directly affect both behavioral intention and actual use. Lack of accessibility and time-based aids, insufficient data, and a deficiency of resources may hinder users' ability to utilize the digital library (Akhmad Habibi, 2021). Few researchers were cited in their study who reported positive relationships between facilitating conditions and behavioral intention and digital library use (Andrews et al., 2021; Ayaz and Yanartas, 2020; Chang et al., 2015; El-Masri and Tarhini, 2017; Moorthy et al., 2019; Shivdas et al., 2020). Therefore, it can be hypothesized that:

H4: Tangibles has a significant and positive relationship with engagement of non-DL resources.

Empathy

Empathy is defined as the firm's attentive, individualized care for each the end user (Parasuraman et al., 1985). In their study, Omar, M. S., Mohd Salleh, N., and Arshad, N. J. (2021) found that most academic library staff demonstrate empathy by providing individual attention to students, general assistance with research, and attentive listening to students' questions. Consequently, this element contributed to student satisfaction with the staff's services. In addition, research indicates that an organization's ability to comprehend the consumer and provide the necessary customer service at any time without causing any inconvenience will have a significant impact on customer satisfaction (Parasuraman, 2010). A

study by Wang, I.M., and Shieh, C.J. (2006) on service quality and user satisfaction identified a few elements under empathy, including collections that meet course needs, multi-media services, and sufficient volumes of electronic publications, as measured by simple regression analyses that revealed a significant and positive relationship between service quality and user satisfaction. Therefore, it can be hypothesized that:

H5: Empathy has a significant and positive relationship with engagement of non-DL resources.

Responsiveness

According to Parasuraman et al. (1985), responsiveness is the willingness to assist consumers and provide prompt service. Chepukaka, Z. K., and Kirugi, F. K. (2019) have conducted a study on service quality and customer satisfaction at Kenya national archives and documentation service (KNADS). They have observed the element of responsiveness by assessing the perceived willingness of KNADS staff to assist customers and provide them with prompt services when required. Three- quarters of respondents rated staff response to their information requests as unsatisfactory, while a quarter rated it as satisfactory. They concluded that the fact that users found the environment of the archives to be perplexing and intimidating contributed to consumer dissatisfaction and decreased engagement with them as a service provider. Therefore, it can be hypothesized that:

H6: Responsiveness has a significant and positive relationship with engagement of non-DL resources.

Findings

While open access resources have gained significant attention and popularity in recent years, there are still several research gaps that exist in this area. Despite all of the research, there remains a significant gap in understanding farther on non-digital library resources and its engagement among the users, especially in the context of Malaysia. Recent studies were conducted focusing on the digital library context as from the Nima Soltani-Nejad et al., 2020, Akhmad Habibi et al., 2022, M.A. Sanjeev et al., 2021, Memoona Iqbal et al., 2022, Pankaj Misra and Gaurav Chopra (2023). Only few recent studies regarding non-digital library resources such as from Hafiz Muhammad Adil et al., (2022), Gunasekaran Mangai and Perumal Ganesan (2022). The closure of user's engagement with non-digital library resources also have not been adequately explored. Masrek and Samadi (2017) observed that user engagement did not receive the attention it deserved because previous research focused more on usability or adoption. Research is needed to explore the user engagement of accessing and navigating non-DL resources. This includes studying reliability, assurance, tangibles, empathy and responsiveness based on the SERVQUAL model to investigate and get better comprehension on open access resources for future improvement and enhancement of user satisfaction.

There is also a noticeable gap in research pertaining to the reliability and quality of the non-DL resources. In their recent study, Hafiz Muhammad Adil et al. (2022) systematically review the literature, focusing on OERs' benefits and challenges in the academic world following the preferred reporting items for systematic literature reviews and meta-analyses (PRISMA) guidelines. They noted that non- digital library resources suffer from a lack of time for resource identification, a lack of information regarding utilization, and lack of quality assurance. It is in line with study from Hamid R. Jamali and Saeid Asadi (2009), revealed that librarians have criticized non-digital library resources such as Google for what they perceive to be a negative impact on students' and academics' information-seeking behavior, as well as the symbol of

competition to the academic library, and a poor place to begin an academic research paper. That recent study from Hafiz Muhammad Adil et al. (2022) used a reputable quality assessment tool to evaluate each paper, but there is still the possibility of overlooking critical information. This suggests that more research is needed to develop effective quality control measures for non-DL resources.

Review of the literature also reveals significant gap on copyright and licensing. Hafiz Muhammad Adil et al. (2022) found that a lack of awareness about licenses that govern the use of non- DL resources can lead to copyright infringements. Open access resources operate under different copyright and licensing models, ranging from Creative Commons licenses to more restrictive agreements. Research is needed to examine the implications of these different models, including the impact on reuse, remixing, and collaboration. Additionally, there is a need to explore the legal and ethical challenges surrounding copyright infringement and plagiarism in open access publishing.

There is also clear gap regarding sustainability and business models of the non-DL resources. Open access resources often face financial challenges in terms of sustainability as it is commonly pointed out that even though a resource may be free for the consumer, it does not follow that the resource is free in the sense that it nonetheless costs something in funding or services to create and distribute a resource. Consider, for example, the Stanford Encyclopedia of Philosophy, an open learning resource made freely available on the internet but the service costs roughly $190,000 USD to provide as the bulk of the costs are in staffing ($154,300 USD) with contract programming; travel and office expenses; computer services and overhead taking up the rest (Downes, S., 2007). Research is needed to explore various business models for open access (non-DL resources) and to assess their viability and effectiveness. This includes investigating alternative funding mechanisms, such as article processing charges, institutional memberships, or crowdfunding, and evaluating their impact on the availability and accessibility of open access resources.

Discussion

Open access resources have gained significant momentum in recent years, enabling the widespread dissemination of knowledge, and promoting collaboration among researchers. Based on the findings of gaps in past literatures, here are a few potential directions that can be explore in future research. One of the potential directions is to bringing impact to global perspectives by exploring further on non-DL resources and its engagement in developing countries, such as Malaysia. Much of the existing research on open access resources has primarily focused on Western countries. There is a need for more research that mainly examines on user's engagement along with the adoption, challenges, and benefits of non-DL resources in diverse global contexts out of Western countries. Understanding the engagement of non-DL resources in different regions can help inform policy decisions and support equitable access to knowledge worldwide.

The next future direction of the paper is to enlighten on the non-DL resources' publishing models. Business models for open access publishing have been in the spotlight of scholarly publishing for many years, but there is lack of studies conducted that discussed closely regarding numerous publishing models. The notion of a business model for open access publishing carries a different weight for publishers, researchers, and libraries. It commonly includes aspects such as "client" segment

(author, reader, funder, library, etc.), income sources (subscription, advertisement, grant, etc.), structure/hierarchies related to meeting costs and value proposition for these different "clients" (Dallmeier-Tiessen, S., et al., 2010). There is a need for future paper to investigate different open access publishing models and their impact on the dissemination of research. This includes exploring the viability of various funding models, such as article processing charges, institutional support, and consortium-based approaches.

The other potential direction for future research is to explore further on the copyright law and regulations of the non-DL resources among the users. A latest study by Subaveerapandiyan A. (2023) explored the information-sharing behaviour and awareness of students towards the infringement of copyright and associated rights while information sharing. Any educational material for the public domain or licensed under a Creative Commons license is considered an open educational resource (i.e., outside copyright regulation). The study found that many students in India engage in copyright infringement, either deliberately or unwittingly. Many students are unaware of copyright laws and regulations and do not understand the consequences of their actions. According to Huijia (2018), there is a need to educate users about copyright and increase collaboration among law enforcement, public security, and prosecuting authorities to reduce criminal copyright infringement, thus will direct this future paper to explore, investigate, and disseminate the knowledge regarding this issue to improve on the development of non-DL resources, and user's satisfaction in accessing the resources.

Conclusion
As a conclusion, the development of technology, the implementation and use of online resources have emerged, resulting in a significant shift in library services and access to information resources, and the emergence of the digital library which has also led to the rapid practice of non-digital resources among the users that has caught many attention. Open access resources (OAR) and non- digital library resources (non-DL resources) are essentially synonymous terms that refer to the same entity, that seeks unrestricted and open online access to academic information such as publications and research data. Information technology has changed the way of teaching and learning in higher institution that has make open access resources are quickly becoming significant components in higher education such as the use of Directory of Open Access Journals (DOAJ), Open Access Scholarly Source Book (OASIS), Research Gate, Academia.edu, Open Springer, Google Scholar, etc.

This study thoroughly investigates the engagement of non-DL resources among undergraduate students from School of Information Science, College of Computing, Informatics and Media, Universiti Teknologi MARA to address the current scenario, gaps and advance the understanding in this area. This study forge new ground and offer novel viewpoints on the topic by doing thorough literature evaluations, conceptual framework for systematic investigation, advanced methodology, and examine a variety of variables and hypotheses to be tested in accordance with the research objectives. This study will push the boundaries of knowledge and offer insightful information guided with few directions for future research, ought to aid in the creation of creative solutions and ultimately benefit both service providers and users. It is intended to further knowledge and encourage additional research in this field of study by performing rigorous research and presenting convincing findings.

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