

**FACTORS INFLUENCING THE ACCEPTANCE OF
DIGITAL REFERENCE SERVICES AMONG STUDENTS
IN THE SULTANATE OF OMAN'S ACADEMIC
LIBRARIES: A MODIFIED UTAUT MODEL**

BY

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ABSTRACT

In the age of the technological revolution, the library concept has changed due to the trend of using computers and other telecommunication technologies in the libraries. The searchers' needs are no longer confined within the library walls as the Digital Reference Service (DRS), which is an evolving traditional reference service, has become more popular. Moreover, this revolutionary trend has been embraced by most higher education institutions in Oman. Although academic libraries in Oman are currently providing the Digital Reference Service for their users, fulfilling the needs of remote users in the academic library has become highly complex with the increase of information sources accessible on the Web and changes in library users' behaviour. This study is significant as the DRS in the Sultanate of Oman's academic libraries could be carefully evaluated and further enhanced by specifying the students' acceptance and the use pattern. Thus, this study aimed to investigate the current DRS usage based on the American Library Association's Reference and User Services Association (RUSA) guidelines., identify factors influencing the DRS usage in the Sultanate of Oman's academic libraries., and develop DRS acceptance model based on Unified Theory of Acceptance and Use of Technology (UTAUT) and Task-Technology Fit (TTF) models. This study adopts a mixed-method approach utilizing UTAUT and TTF models as the research framework. Data were collected from 459 respondents via an online survey followed by an interview session voluntarily. Both SPSS and PLS-SEM were utilized for quantitative data analysis, and ATLAS.ti was used for qualitative data analysis of the study. This study revealed a better understanding of the acceptance and usage of DRS among students in the academic libraries of the Sultanate of Oman by modifying the UTAUT model. Significant factors found are performance expectancy, social influence, facilitating conditions, task technology fit and attitude toward using technology. The results showed a high level of adherence to the RUSA guidelines for DRS in academic libraries in the Sultanate of Oman. The qualitative research provided further explanations of the survey results, which clarified and supported the findings of the quantitative method. In the context of Omani literature, the UTAUT model was not adopted in related research of DRS. Hence, this study is the first to use factors on behavioural intention in accepting DRS among students in the Sultanate of Oman's academic libraries by adopting the Unified Theory of Acceptance and Use of Technology (UTAUT). This study is beneficial for library managers and policymakers in Oman's academic libraries by motivating them to develop unified standards for facilitating collaboration, serving, and satisfying the most significant possible sample of users.

خلاصة البحث

في عصر الثورة التكنولوجية، تغير مفهوم المكتبة بسبب اتجاه استخدام أجهزة الكمبيوتر وغيرها من تقنيات الاتصالات الأخرى في المكتبات. لم تعد احتياجات الباحثين محصورة داخل جدران المكتبة، حيث أصبحت الخدمة المرجعية الرقمية، وهي خدمة مرجعية تقليدية متطورة، أكثر شيوعًا. وعلاوة على ذلك، تبنت غالبية مؤسسات التعليم العالي في عمان هذا الاتجاه الثوري. على الرغم من أن المكتبات الأكاديمية في عمان تقدم حاليًا خدمة المراجع الرقمية لمستخدميها، إلا أن تلبية احتياجات المستخدمين عن بُعد في المكتبة الأكاديمية أصبح معقدًا للغاية مع زيادة مصادر المعلومات التي يمكن الوصول إليها على الويب والتغيرات في سلوك مستخدمي المكتبة. وستكون هذه الدراسة مهمة حيث يمكن تقييم الدراسة في المكتبات الأكاديمية في سلطنة عمان بعناية وتعزيزها من خلال تحديد قبول الطلاب ونمط الاستخدام. وبالتالي، تهدف هذه الدراسة إلى التحقيق في استخدام DRS الحالي بناءً على إرشادات جمعية خدمات المستخدمين والمراجع التابعة لجمعية المكتبات الأمريكية (RUSA)، وتحديد العوامل التي تؤثر على استخدام DRS في المكتبات الأكاديمية في سلطنة عمان، وتطوير نموذج قبول DRS بناءً على نماذج UTAUT و TTF. تتبنى هذه الدراسة نهجًا مختلطًا باستخدام نماذج UTAUT و TTF كإطار بحثي. تم جمع البيانات من ٤٥٩ مجيبًا عبر استطلاع عبر الإنترنت تلتها جلسة مقابلة طوعية. واستخدم كل من نظامي SPSS و PLS-SEM في التحليل الكمي للبيانات، واستخدم ATLAS.ti في التحليل النوعي للبيانات للدراسة. كشفت هذه الدراسة عن فهم أفضل لقبول واستخدام DRS بين الطلاب في المكتبات الأكاديمية في سلطنة عمان من خلال تعديل نموذج UTAUT. ومن العوامل المهمة التي تم العثور عليها هي توقع الأداء، والتأثير الاجتماعي، وظروف التيسير، وملاءمة تكنولوجيا المهام، والموقف تجاه استخدام التكنولوجيا. وأظهرت النتائج مستوى عالٍ من الالتزام بمبادئ RUSA التوجيهية الخاصة بـ DRS في المكتبات الأكاديمية في سلطنة عمان. وقدم البحث النوعي مزيدًا من الإيضاحات لنتائج الاستقصاء، التي أوضحت ودعمت نتائج الطريقة الكمية. في سياق الأدب العماني، لم يتم اعتماد نموذج UTAUT في البحوث ذات الصلة من DRS. وبالتالي، هذه الدراسة هي الأولى لاستخدام عوامل النية السلوكية في قبول DRS بين الطلاب في المكتبات الأكاديمية في سلطنة عمان من خلال اعتماد نظرية موحدة للقبول واستخدام التكنولوجيا (UTAUT). ستفيد هذه الدراسة مديري المكتبات وصناع السياسات في المكتبات الأكاديمية العمانية من خلال تحفيزهم على تطوير معايير موحدة لتسهيل التعاون وخدمة وإرضاء أهم عينة ممكنة من المستخدمين.

APPROVAL PAGE

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DECLARATION

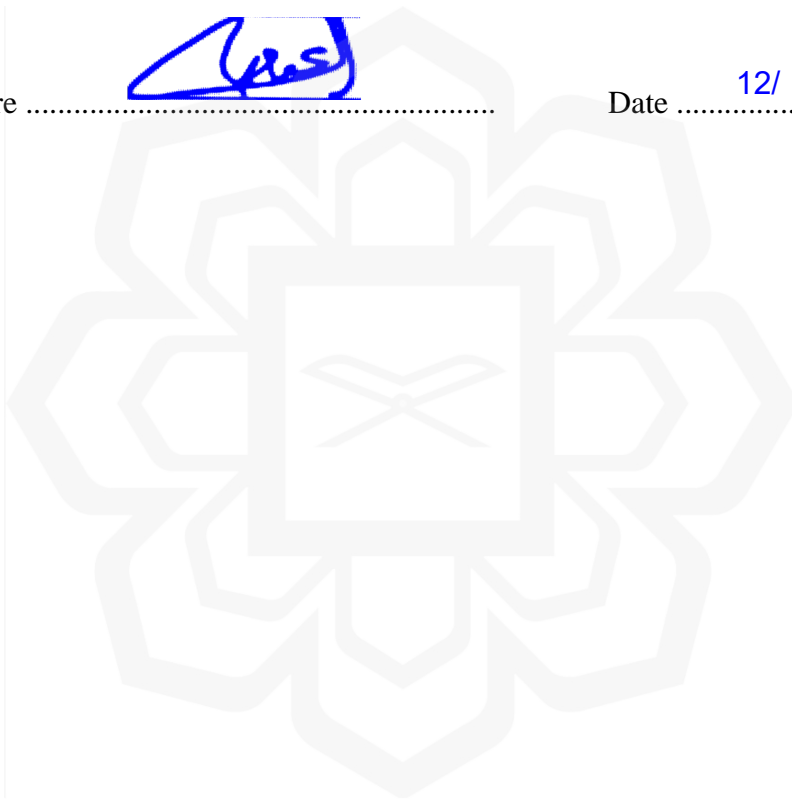
I hereby declare that this thesis is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

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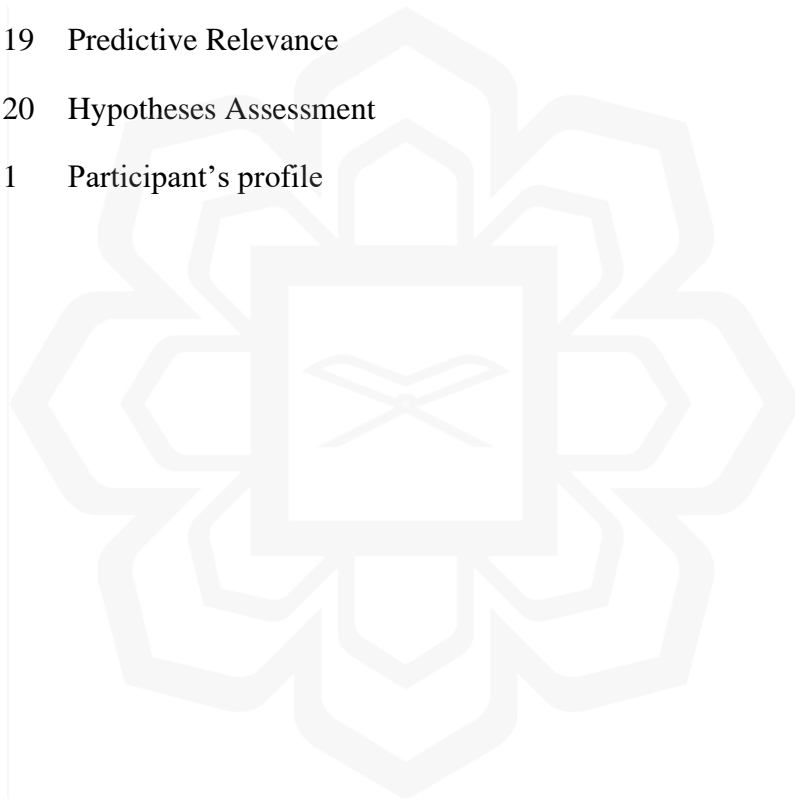
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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

In the libraries, the reference quality is an essential personalized service. Traditionally, it has been a one-to-one service involving the user and a reference librarian physically direct interaction in the library. Reference service is characterized by library users coming into the reference section of the library to either consult the reference materials or the reference librarian. The user is assisted by the range of sources available to satisfy his or her information requirements (Ezekiel, A. O.,2018).

The Reference desks in academic libraries have historically been the position where skilled librarians serve as intermediaries to connect users to library collections and services (Bandyopadhyay & Boyd-Byrnes, 2016). According to Younus (2014), in addition to supporting users in the reference desk, the reference librarian assists users with the reference services in cyberspace by using online technologies. Recently, academic libraries have become more commonly visible on the Internet, and many are launching websites and finding ways to extend their services by engaging with users and reacting through the Internet to their enquiries and this service is called Digital Reference Service (Uutoni, 2014).

The digital reference service in the Sultanate of Oman's academic libraries began in 2004 via e-mail in the main library at Sultan Qaboos University, and then the instant messaging service was made available in 2011 by a program called MEBO, but it was suspended in 2012 due to a lack of staff. In 2013, the inquiry web form and Twitter were both launched. There was low DRS awareness among students, as well as a lack

of knowledge about the service's existence, a shortage of trained staff, ineffective marketing, and a lack of instructions for using the service (Almahroqi,2014).

DRS have shown their significance during the Covid 19 during the time of suspension of studies in all educational institutions in the Sultanate of Oman, as Academic libraries continued to provide remote services to the user community with the required and appropriate information.

For instance, the main academic library at Sultan Qaboos University has provided a distinguished service that is compatible with the developments taking place, by providing the "Wiley's publisher" database, specializing in the publishing of Coronavirus-related scientific articles, which is available on the library's website. In addition, the main library subscribed to the Cochrane Medical Database, which includes many scientific journals and provided educational information on disease prevention through its social networking sites, as well as links to digital library websites and contact with users via the Internet by consulting, responding to queries and offering reference services (Oman journal, 2020).

The United Nations has established 17 Sustainable Development Goals (SDGs), also known as the Global Goal, which call for action to respond to the global challenges facing our world; challenges such as poverty, inequality, the protection of the environment and ensuring peace and prosperity for all. At the UN Summit in September 2015, Oman was one of the world's nations to recognize and adopt the Sustainable Development Goals (SDGs), being one of the Member States that agreed to devote all efforts to achieve these goals. Goal 16 of the SDGs helps guide peaceful and inclusive communities for sustainable growth, ensuring access to justice for all, and building effective, accountable and inclusive institutions at all levels.

The goal 16.10.2: includes ensuring public access to information and protecting fundamental freedoms, following the national legislation and international agreements. In this regard, Oman adopted policy guarantees for public access to information as an effort and as a step to enhance the digital services by offering open and free governmental datasets, anyone can access, share and use these datasets and develop tools and applications to benefit Oman (Official Oman E-Government Services Portal, 2019). Higher education institutions have a role in achieving sustainable development goals, such as Sultan Al-Qaboos University, in holding seminars and developing advanced plans and programs that support and promote sustainable development goals (Oman news agency, 2021).

The DRS is a network of mediators and experts working to meet the needs of the user in the internet world (Dawood, 2015). By referring to IFLA standards the librarian should have a high skill in providing the DRS to serve and meet users' questions. DRS specialists should be multi-tasking, have good communication skills, especially in writing, knowledge of reference resources and familiarity with software packages. The specialist should also be trained as necessary to gain expertise and developments in the field to provide DRS (IFLA Digital Reference Guidelines, 2015).

As mentioned by Bakar (2009), remote access to reference services by library users is a significant challenge. Libraries need to establish strategies that meet current users' demand for remote access. The terms virtual reference, digital reference, e-reference, Internet Information Services, live reference and real-time reference are interchangeable terms used to describe reference services that make use of computer technology in some way. Whether it is an email reference, chat reference or an automated routing system, DRS affects the delivery of high-quality services (Harsh & Mishra, 2012).

In this digital age, a variety of choices relating to reference services have become available, and libraries need to start selecting which communication modes to use. The more technology is used in the reference services, the easier it is to obtain statistical information that assists libraries to make the right decisions about the services that they can provide (Gurganus, 2015).

Ramos and Abrigo (2012) demonstrated that DRS in academic libraries deserves a high degree of marketing to make their users aware of the existence of these services. Bandyopadhyay and Boyd-Byrnes (2016) mentioned that in academic libraries, reference transactions through direct communication between librarians and users once were the gold standard. Nevertheless, in today's academic libraries, the use of digital technologies to provide reference services to remotely locate users is very common. Besides phone and email, several academic libraries now use chat, text messaging, instant messaging (IM), audio and videoconferencing software to offer DRS.

In modern information system (IS) literature, an explanation of user acceptance of new technologies is often described as one of the most significant research areas (Venkatesh et al., 2003). Alshehri et al., (2019) concluded that as students are using technology, they will create a more suitable environment for greater adoption, as well as helping in developing strategies for promoting acceptance.

According to Iberahim et al. (2017) users who are familiar with Internet technology have shown little interest in using digital library services through mobile phones even if the library service is useful and the tool is free online. Hence, it is crucial to understand possible factors influencing the acceptance of DRS.

This study mainly adopts the UTAUT (Unified Theory of Technology Acceptance and Use). Awwad and Almajali (2015) asserted that The UTAUT model

has proven to be more accurate than other models in predicting acceptance of technology 70 percent of the time, especially in developing countries.

A study by Khan et al., (2017) adapted the UTAUT model to explore factors affecting the adoption of DRS among Pakistan's university librarians. The researchers concluded that the UTAUT model would be useful in studying the behavioural intention of an individual towards technological adoption.

A study by Alshehri et al, (2019) adopted the Unified Theory of Acceptance and Use of Technology (UTAUT) to examine and clarify the purpose and behavioural use of the Blackboard system by Saudi Arabia students using an expanded version of the UTAUT model. The empirical findings concluded that technical support is essential in evaluating Blackboard's acceptance and use. It can be verified that in a Saudi context, all data elements and parameter values of the UTAUT theory are true and robust. The use of the UTAUT model as a basic theory in the educational context and the inclusion of an additional construct ("technical support") demonstrated the applicability of the extended model in Saudi universities ' web-based learning environment.

This study will shed light on the modification of the UTAUT model and investigate the acceptance and usage of DRS among students in the academic libraries of the Sultanate of Oman as the DRS is one of the basic services in academic libraries to provide recommendations that could help enhance and expand the service. This study is also intended to inspire researchers to do further research related to the DRS in the Omani literature context.

1.2 STATEMENT OF THE PROBLEM

Libraries have developed new services and methods to connect with students and ensure accessibility as the world has shifted to a digital environment, including online services,

resources, and extended hours of operation ((Murphy et al., 2022). Nowadays, DRS has become one of the core services offered to users in higher education academic libraries. Consequently, fulfilling the needs of remote users in the academic library has become highly complex with the increase of information sources accessible on the Web and changes in library users ' behaviour (Tyler & Hastings, 2011). As per Jayakananthan & Jeyaraj (2019), technology has little value unless it is used. The acceptance and use of technology by people may have significant theoretical and practical implications.

A study by Almahroqi (2014) illustrated that academic libraries in the Arab world have begun to provide the reference service modestly and limited patterns such as email, web form and Ask the Librarian service to have been the main channels in providing the service with a low-quality level. Furthermore, Alhinai (2014) asserted that the DRS in some Omani medical libraries is still in its early stages, where only e-mail and telephone are used to respond to reference queries. In addition to the lack of understanding by many users about the value of the available DRS, it negatively affected its use. He found that most students in the main library at Sultan Qaboos University in Oman do not know about the library's DRS and thus lowered the statistics annually.

The Reference and User Services Association (RUSA) is in charge of assisting and supporting the delivery of reference services to library users of all ages. It has developed standards and guidelines for the creation and delivery of reference services (Younus, 2014). RUSA guidelines cover five aspects of virtual reference service implementation and maintenance. Libraries should consider preparing for, organizing, and ensuring privacy when planning to implement a virtual reference service. The guidelines covered a few key points, such as integrating traditional reference services with digital reference services, defining the users to whom the service will be provided,

providing the best quality service possible, and assessing and comparing the level of adherence to professional guidelines developed by the International Federation of Library Associations and Organizations (IFLA), American Library Association (ALA), and Reference and User Service Association (RUSA) (Rehman & Kandari, 2019).

Alhaji and Almahroqi (2013) found that the level of adherence to the RUSA DRS Guideline in academic libraries at Qaboos University was low. Many Oman academic libraries provide reference services to users, but the reality of this service is yet to be investigated and evaluated. This research is intended in bridging out the gap of knowledge by defining the use pattern of DRS in the Sultanate of Oman's academic libraries, then exploring the level of adherence to the RUSA guidelines.

In 2018 Alkharousi et al., mentioned that academic libraries are facing significant challenges since many library users are Internet users and therefore libraries need to integrate the use of Internet tools to suit the behaviour of users. In the context of Oman, however, most academic libraries are unaware of the significance of the Web 2.0 environment. This is also clearly expressed in the Omani Academic Library (OAL) portals where links to Facebook are inactive.

Digital reference services are advantageous for the academic community. If the students do not accept and use technology, these advantages cannot be achieved (Arif, M., Ameen, K., & Rafiq, M. ,2018). In the context of Omani literature, the behavior toward DRS was not investigated by using a model of Acceptance and Use of Technology to understand the user's behavior of these services. The previous studies focused mainly on mobile commerce (Aljabri, 2018) used the UTAUT2 model in predicting consumer acceptance of commerce. Al-Aziziyah, (2017) used the UTAUT model to determine factors that affect the use of mobile applications through Oman government agencies.

Therefore, the gap is addressed regarding using the constructs proposed by UTAUT promoting the term: influencing acceptance of DRS among the students in Oman academic libraries. This study examines the main factors in the UTAUT model (performance expectancy, effort expectancy, social influence, facilitating conditions) and extend by the inclusion of task technology fit and attitude toward using technology. Consequently, it is necessary to apply such a model to the study of the use of DRS in the context of Omani and to provide a better understanding of the user's behavior of these services.

1.3 RESEARCH OBJECTIVES

This research aims to modify UTAUT model to identify the factors influencing the DRS acceptance among students in the Sultanate of Oman's academic libraries. In this regard, the research sought to:

1. Investigate the current DRS usage based on the RUSA guideline.
2. Identify factors influencing the DRS usage in the Sultanate of Oman's academic libraries.
3. Develop a DRS acceptance model based on UTAUT and TTF models.

1.4 RESEARCH QUESTIONS

1. To what extent do academic libraries in the Sultanate of Oman adhere to RUSA guidelines?
2. What are the factors that influence on students' acceptance and use of DRS in the Sultanate of Oman's academic libraries?
3. What is the model to measure the DRS in the Sultanate of Oman's academic libraries?

1.5 THEORETICAL FRAMEWORK

The theoretical framework to be utilized is the Unified Theory of Acceptance and Use of Technology (UTAUT) adapted by Venkatesh et al., (2003). The selection of the UTAUT model for this study is justified by its global and integrative approach, which integrates a broad range of explaining variables from the major theoretical models developed to explain the acceptance and use of technology (Attuquayefio & Addo, 2014). This model contains models that have been tested and validated in previous studies for the adoption and use of the latest information technology (Megadewandanu, 2016). In addition, a study by Jaya et al., (2017) stated that the UTAUT model has been developed to explain users' behavior regarding information technology. The UTAUT model allows expansion, so this research extends the UTAUT to provide an external construct to understand the key factors influencing the behavior intention of individuals to introduce DRS in Oman's academic library. The Task Technology Fit (TTF) is integrated into the UTAUT to this effect.

According to Wang (2018), the UTAUT model relied on explaining users' perception of technology while Goodhue and Thompson (1995) proposed the task-technology fit model to extend the UTAUT model. The TTF model considers how task affects the use of technology. In other words, adoption by the user is determined not only by technology perception but also by the task-technology fit. The TTF model is often used when being integrated with other models.

1.6 RESEARCH HYPOTHESES

The discussion on the variables and hypotheses that serve the purpose of this study is as follows: