# Understanding new dimensions of User Perceptions of Information Communication and Open Access Repositories in Academic Research in Developing Countries

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## Abstract

Despite the extensive efforts made by various institutions in China, the Open Access (OA) repositories in academic research face significant challenges related to quality of information, technological infrastructure, and usability. This problem led the current study to identify new dimensions of user perceptions of information communication and OA repositories in academic research in China. In addition, this study introduced the influential role of digital literacy to shape the user perceptions of information communication and OA repositories in academic research. After collecting primary data from the user of OA repositories in China, statistical tool was employed for data analysis. Findings of the study identified three important dimensions of user perception which include: quality of information, technological infrastructure, and usability of repositories. Along with these dimensions, digital literacy has a key role in the promotion of user perception. This study has key importance for policymakers and academicians to enhance the better use of OA repositories.

### Keywords

Information Communication, User Perception, Quality of Information, Technological Infrastructure, Usability, Digital Literacy, Open Access Repositories.

## 1. Introduction

Open Access (OA) repositories have valuable importance among the community of researchers (**Vanaja; Naika**, 2024; **Nazim; Zia**, 2020; **Olejniczak; Wilson**, 2020) since it provides a platform to contribution by producing more research. Researchers can publish their work on a digital platform that is easily and freely accessible to everyone by using OA repositories or archives (**Sethi**, 2024). Subject areas are typically used to organize repositories; however, some organizations also keep interdisciplinary archives. Articles, books, monographs, data, multimedia files (audio and video), conference proceedings, and more can all be found in these repositories. Popular OA repositories include: PubMed Central, ArXiv, DOAJ, Europe PubMed Central, SSRN, BioRxiv, E-LIS, Zenodo, OpenDOAR etc. Various OA repositories are reported in Figure 1.

OA repositories in various countries are not working in effective way (**Langham-Putrow *et al.***, 2021). In developing countries, the adoption and effective utilization of OA repositories in academic research face significant challenges related to quality of information, technological infrastructure, and usability. There are several issues in developing countries like China (**Fang; Zhu**, 2006; **Loan; Mushtaq**, 2019). A major issue is the inconsistency in the quality of information available in these repositories. Researchers often encounter outdated, irrelevant, or poorly curated materials, which undermines their trust in the platform and reduces its utility in advancing academic work. It has a negative influence on research activities carried out by the researchers in China (**Hu *et al.***, 2012). This lack of reliable content is exacerbated by limited mechanisms for peer review and quality assurance, leading to a fragmented perception of open-access repositories as credible academic resources. More importantly, it is one of the hurdles in producing quality research by the academicians and well as various research organizations.


Figure 1: OA Repositories.

Additionally, a significant obstacle to efficiently accessing and utilizing these important resources is the technology infrastructure in various poor nations (**Sultan; Rafiq**, 2021). Although China is putting lot of efforts in the development of technological infrastructure, however, several gaps weakening the OA system. Researchers capacity to investigate as well as obtain required resources is hampered by poor internet connectivity, limited bandwidth, and frequent power outages, particularly in rural or impoverished areas. Along with the other issues, poor internet connectivity is one of the major problem in different developing countries (**El Said**, 2021). The adoption of these repositories is limited because, even in cases when access is theoretically feasible, the poor speed of connectivity frequently makes regular engagement with them impracticable. Therefore, there are number issues related to the OA system in developing countries like China leading to the development of negative perception of information communication and OA repositories.

Moreover, another level of complication is introduced by the usage of repositories. The interfaces of several platforms are tough for the researchers with varying degrees of computer literacy to utilize since they are not designed with the user in mind. This issue is specifically significant in the contexts where academic users may lack advanced technological skills or familiarity with online research tools (**Nazim; Zia**, 2020). All of these issues make it more difficult for open-access repositories to support scholarly research in underdeveloped nations. In order to address these issues, focused efforts must be made to guarantee high-quality content, upgrade technological infrastructure, and increase repository usability, all of which must be in line with the requirements and reality of researchers in these areas.

The objective of this study is to identify new dimensions of user perceptions of information communication and OA repositories in academic research in China. China is selected in this study because developing nations are facing issues related to OA repositories. The exploration of new dimensions has the potential to reduce the issues related to OA repositories in China having important benefits to produce quality research. Several studies considered OA repositories (**Ferreras-Fernández *et al.***, 2013; **Mamtora *et al.***, 2015; **Nazim; Zia**, 2020; **Islam; Akter**, 2013), however, rarely any study considered the new dimensions of user perception. According to this study, the quality of information, technological infrastructure and usability of repositories are critical to promote perception of user towards OA repositories. In addition, the influential role of digital literacy can also reduce the issues of OA repositories. Hence, this study has valuable importance for the literature to extend the field of OA repositories. Finally, this study has key importance for policymakers and academics to enhance the better use of OA repositories.

## 2. Literature Review

### 2.1. Open Access Repositories

OA repositories are document servers where OA publications are made permanently accessible online in full text as well

as free of charge – either directly by the authors or by their individual institutions (**Pinfield *et al.***, 2014). Reprints or preprints of journal articles, audio, video, and other material, as well as digital data, can all be preserved and made publicly accessible through open repositories, which are electronic services (**Ganaie *et al.***, 2014). Public availability of the documents has substantial importance for the readers. Although they might give access to edited, peer-reviewed papers, they typically do not offer editing or peer review services directly, in contrast to electronic journal or book publishers. An institution may establish repositories for its own authors and researchers or allow deposits from any researcher working in a certain field. Certain funding organizations mandate that data and/or articles from the studies they support be stored in an OA repository. The process of publishing in OA repositories is reported in Figure 2. It includes metadata validation by the content manager and automatic assignment of persistent identification. Authors can upload publications and metadata by following their own submission process.

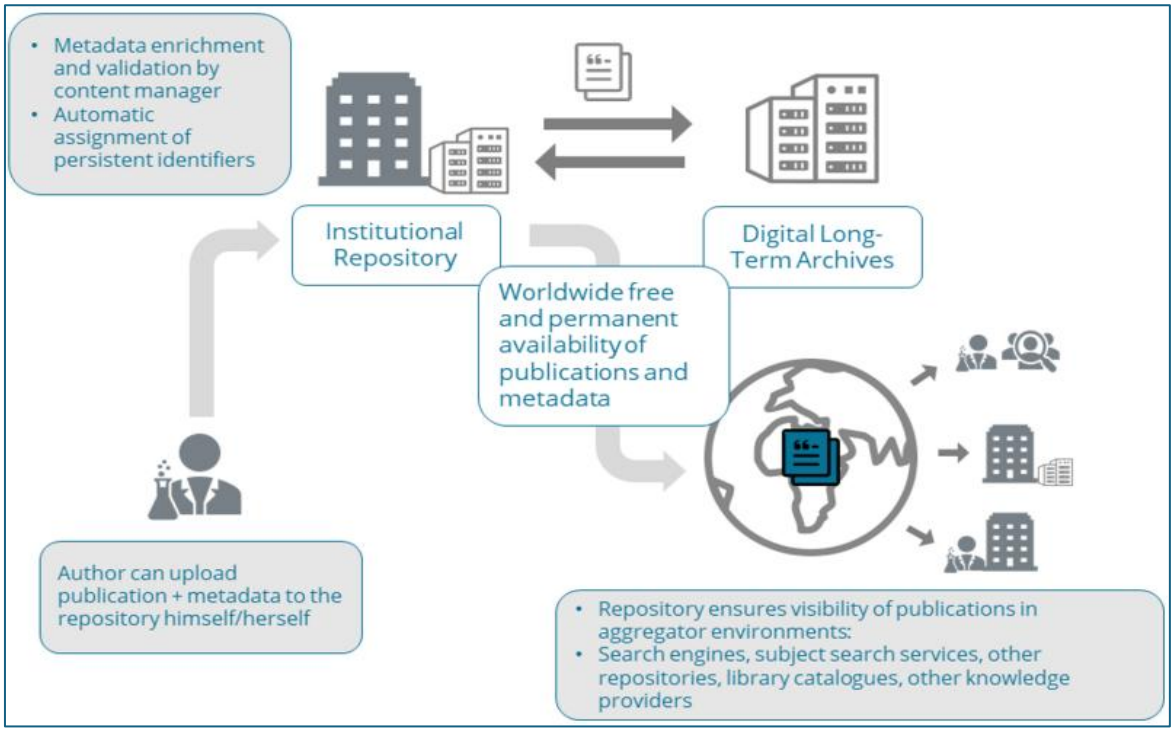


Figure 2: Publishing in Repositories.

Institutional and disciplinary repositories are distinguished. Institutional repositories are document servers run by organizations that allow their members to publish academic papers digitally (**González-Pérez *et al.***, 2020). These organizations are typically research organizations, university libraries, or other infrastructure establishments. On the other hand, disciplinary depositories are not specific to any one institution. Scientists and academics might use them to publish and preserve their works on certain topics, such as in a specialized field.

## 2.2. Influence of Quality of Information on User Perception of Information Communication and OA Repositories

The quality of information significantly influences user perception of information communication and OA repositories, playing a pivotal role in their adoption and sustained use. The quality of information is most important research related activities to promote an original results (**Gargouri *et al.***, 2010). High-quality information in OA repositories fosters trust and credibility among users, as it ensures that the content is accurate, reliable, and up to date. When various researchers, educators, and the students encounter well-curated, peer-reviewed, and relevant resources, they perceive the repositories as valuable tools for academic and professional growth. This perception not only promotes frequent use but also builds a positive image of the repositories as indispensable components of the scholarly ecosystem. Therefore, quality of information has relationship with OA repositories (**Schöpfel; Azeroual**, 2021; **Singh *et al.***, 2021).

Furthermore, high-quality information improves the efficiency of information sharing via OA platforms which leads to high quality research results. Users can find requested materials more quickly and effectively when there is clear categorization, appropriate indexing, and comprehensive metadata present (**Kesten; Hoover**, 2022). Users are more likely to regard the repositories as reliable knowledge sources and get more involved when they believe the content offered fits with their study goals. The impression that OA repositories are easy to use and created with the needs of the academic community in mind is strengthened by this flawless experience. In addition, the availability of high-quality information fosters equitable access to knowledge (**Nikiforova; Lnenicka**, 2021), particularly in developing countries where access to subscription-based journals is often limited. The developing countries have lack of access to various

sources. The lack of access has an adverse role in the quality of research activities among institutions. By bridging the gap in information availability (**Nazim; Zia**, 2020; **Wren**, 2005), OA repositories contribute to academic inclusivity and reduce disparities in research opportunities.

Finally, high-quality information is most important in this process because high-quality information encourages users to interact with interdisciplinary and diverse content, which fosters collaborative learning and innovation (**Ghandour *et al.***, 2017; **Yücel; Usluel**, 2016). Users are more satisfied overall when they can rely on the data for analysis, citations, and decision-making because well-maintained repositories are credible. Thus, data variability in form of quality is the vital part of user satisfaction. This has the potential to influence user perception positively. Therefore, the quality of information serves as a cornerstone for shaping positive user perceptions of information communication and OA repositories. Consequently, users develop a promising opinion of OA archives, linking them with professional reliability, academic excellence, and ease of use. In this direction, excellent information turns these archives into trustworthy resources by guaranteeing correctness, dependability, as well as accessibility, encouraging user participation, contentment, and long-term advocacy.

Hypothesis 1: Quality of information has positive influence on user perception of information communication and OA repositories.

## 2.3. Influence of Technological Infrastructure on User Perception of Information Communication and OA Repositories

There is an important relationship between technological infrastructure on user perception of information communication and OA repositories. Because technological infrastructure is a real instrument to boost OA system. The way that users perceive information communication and OA repositories is greatly influenced by technological infrastructure, since it provide access to the system which also greatly improves their usefulness as well as accessibility. The perceive information is most important element for user satisfaction. It does not matter whether they are in the world, users can use OA repositories without any disruptions to a strong technological basis that guarantees uninterrupted communication. Researchers from different places of the globe, educators, and students may efficiently browse, download, and use information (**Woszczynski; Whitman**, 2016; **Leng *et al.***, 2016), dependable servers, and sophisticated digital tools that minimize latency. So, technology has a major worth in OA system. In addition to important elements such as accessibility, technological infrastructure enhances the functionality of OA repositories by enabling innovative features such as advanced search engines, personalized recommendations, and integration with citation management tools. Users form a satisfactory opinion of the platform as well as associate it with dependability and efficacy in assisting them with their academic pursuits when they have seamless and constant access. It is also observed from the literature that technology and OA has important relationship (**Bhat**, 2009; **Valles *et al.***, 2021).

Furthermore, users trust is increased with the secure technical solutions that protect through various security measures for the protection of personal data and guarantee the accuracy of the information stored in the repositories (**Yoon**, 2014; **Zamith**, 2024). Trust is an important element of individual satisfaction which always having valuable importance for OA platforms. Additionally, certain developments in these important areas such as mobile-friendly interfaces along with offline access options greatly increase accessibility as well as participation in places with insufficient technological infrastructure having key role for institutions and people involved in research activities. Because it instills confidence in researchers, this trust is crucial for user involvement (**Pinfield *et al.***, 2014; **Omeluzor**, 2014) that the platform is a trustworthy and secure place to access and exchange knowledge. Users' perceptions of OA repositories and information technology for knowledge sharing as inclusive as well as empowering tools are further enhanced by these developments, which address the particular demands of users in poor nations. Hence, robust technological infrastructure positively influences user perception (**Wu; Shang**, 2019; **Chugh *et al.***, 2023) by enhancing access, functionality, and security, creating a seamless and trustworthy experience that supports the effective communication and dissemination of knowledge.

Hypothesis 2: Technological infrastructure has positive influence on user perception of information communication and OA repositories.

## 2.4. Influence of Usability of Repositories on User Perception of Information Communication and OA Repositories

Positive user perceptions of information transmission and the overall worth of OA repositories are greatly influenced by their usability. Usability states the measurement of how easily a user can complete their goals when using a service (**Pal; Vanijja**, 2020; **Kushendriawan *et al.***, 2021). The user experience is greatly improved when repositories are created with user-centric features, which make them easier to use and more accessible. Users may find as well as obtain necessary information quickly because of the well-structured interfaces, straightforward navigation, and the unambiguous resource classification. This is typically measured through determined research methodologies under the term “usability testing. Users view the repositories is important as useful as well as essential resources for academic along with professional work

because of their ease of use, which increases user happiness and promotes recurring engagement. Moreover, usability directly impacts how effectively information is communicated within these platforms (**Yin**, 2022). For instance, an intuitive search function that allows users to filter by publication date, author, or topic streamlines the research process, making it more efficient and enjoyable. Features such as advanced search filters, multilingual support, and responsive designs ensure that users from diverse backgrounds can interact with the repository without technical barriers. Thus, usability has the potential to influence OA through different ways and shape the user perception. Hence, reliable and user-friendly platform can promote academic research and increase the user satisfaction.

Furthermore, repositories usability promotes inclusion by accommodating users with different degrees of digital literacy. While providing progressed options for seasoned researchers, available interfaces with low learning curves empower new users. This inclusiveness increases user confidence as well as makes OA repositories more appealing to a wider range of user demographics. The usability of the OA has the valuable potential to influence user satisfaction. Additionally, repositories with offline approach features and mobile-friendly designs cater to customers in poor nations where reliable internet connectivity may be scarce. These types of characteristics further cement OA repositories' standing as fair as well as useful means of information exchange by confirming that they continue to be usable and accessible in a variety of settings.

Hypothesis 3: Usability of repositories has positive influence on user perception of information communication and OA repositories.

### 2.5. Influence of Digital Literacy on User Perception of Information Communication and OA Repositories

Digital literacy is an individual capacity to find, evaluate, and communicate information using typing or digital media platforms (**Audrin; Audrin**, 2022; **Wuyckens *et al.***, 2022). It has a profound positive influence on user perception of information communication and OA repositories, allowing individuals to navigate and utilize these platforms effectively. Most of the users try to approach OA repositories. Users are more likely to view OA repositories as effective resources for the academic as well as professional endeavors when they are trained with the abilities to effectively search, assess, and use digital materials. The user prefer OA repositories because they have financial limitations. It is a mixture of both technical and cognitive abilities in using the technologies related to information and communication to create, evaluate, and share information. By assisting users to fully utilize sophisticated capabilities like keyword searches, metadata analysis, and citation management tools, digital literacy turns what could otherwise be a difficult process into a quick and enjoyable experience. All users cannot use close access repositories. Their capacity to evaluate sources critically strengthens the repository reputation as a trustworthy information sharing platform by fostering confidence in its content. Furthermore, people that are proficient in digital literacy are better able to assess the caliber (**Churchill**, 2020; **Morgan *et al.***, 2022) and applicability of content found in OA repositories.

Digital literacy also enhances the user experience (**Alakrash; Abdul Razak**, 2021) by enabling effective interaction with the communication features of OA repositories, such as personalized content recommendations, sharing options, and collaborative tools. User Experience indicates to the feeling users experience when using a product, system, or service (**Kushendriawan *et al.***, 2021; **Chen *et al.***, 2021). These capabilities make the platform more interactive and dynamic, further solidifying its value in facilitating the academic collaboration and research. In this way, user experience has valuable relationship with user satisfaction. Promoting digital literacy guarantees that users can get over the early obstacles to accessing and using OA repositories in areas with developing technology infrastructure. Due to this, users that are digitally literate view these repositories as encouraging tools that fill in gaps in academic resources and promote international knowledge transfer, in addition to being easily accessible and efficient.

Hypothesis 4: Digital literacy moderates the relationship between quality of information and user perception of information communication, and OA repositories.
Hypothesis 5: Digital literacy moderates the relationship between technological infrastructure and user perception of information communication, and OA repositories.
Hypothesis 6: Digital literacy moderates the relationship between usability of repositories and user perception of information communication, and OA repositories.

## 3. Methodology

This study considered the relationship between quality of information, technological infrastructure, usability of repositories and user perception of information communication and OA repositories. To measure this relationship, six hypotheses were proposed including the direct and moderation effect hypotheses. The nature of this relationship is grounded on primary data. The secondary data was also not available on these variables. Therefore, this study developed a survey instrument to collect data. This study developed the measures of all variables instead of adopting or adapting from previous studies. The quality of information was measured by using perceived reliability and accuracy of information in the repositories. Technological infrastructure was measured by using the availability of stable internet and digital tools. Usability of repositories is measured by using user-friendliness of the platform interfaces. Additionally,

user perception of OA repositories is measured through trust, satisfaction, and willingness to use open-access platforms for academic research. Finally, digital literacy is measured through the ability of researchers to navigate and use online platforms.

Questionnaires were developed on the 7-point Likert scale. The scale includes strongly disagree, disagree, somewhat disagree, either agree or disagree, somewhat agree, and agree. Quality of information was measured through four scale items, technological infrastructure was measured through three scale items, usability of repositories was measured by using five scale items and user perception of information communication and OA repositories was measured by using four scale items. Digital literacy was measured through three scale items. Finally, 19 scale items were used to develop a survey questionnaire. User of OA repositories in China was considered as respondents of the study. Both online and physical surveys were utilized to collect data. While using the email survey, emails were used to collect data. Additionally, various social media platforms were used such as Facebook, twitter and various social media websites were used in data collection. While doing an online survey, three reminders were sent to the respondents. Total 1500 questionnaires were distributed among the users of OA repositories in China. Out of these distributed questionnaires 526 questionnaires were received. All questionnaires were not suitable and 520 valid questionnaires were considered. Furthermore, this study considered variance inflation factor (VIF) to check the issue of multicollinearity. The consideration of multicollinearity issue with the help of VIF was addressed by following the recommendation of previous studies (**Thompson *et al.***, 2017; **Tay**, 2017). According to the literature, VIF values should not exceed 5.0 to confirm that the data has no issue of multicollinearity. Table 1 and Figure 3 highlighted that all the values are less than 5.0 which confirmed that this study has no issue of multicollinearity.

Table 1: Variance Inflation Factor (VIF).

| Variables | VIF |
|---|---|
| Quality of Information | 3.12 |
| Technological Infrastructure | 2.59 |
| Usability of Repositories | 1.25 |
| Digital Literacy | 2.01 |

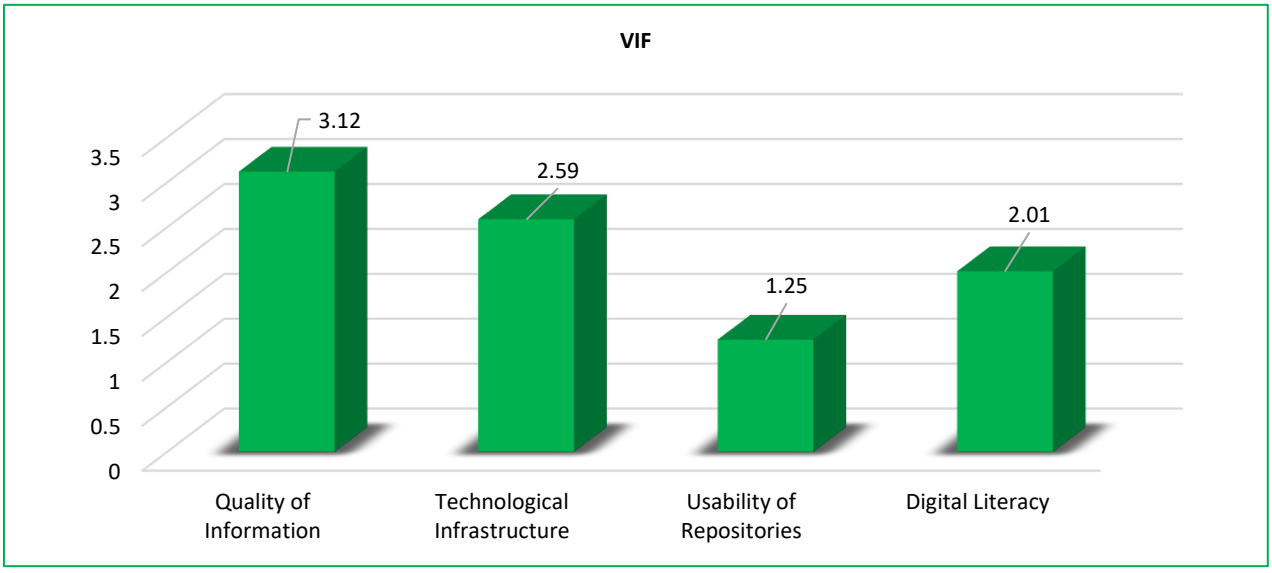


Figure 3: Variance Inflation Factor (VIF).

## 4. Findings

In the initial phase of data analysis, this study emphasized on data screening process which is valuable to get original results (**Flora *et al.***, 2012). In this process, missing values were examined, and the mean replacement method was used to fix the issues of missing value. A total of 09 missing values were found in the whole data set. Furthermore, this study considers outlier in the data. An outlier is a data point that differs significantly from other observations (**Aguinis *et al.***, 2013). However, none of the outliers was found in the data. Normality of the data was considered through normality test skewness and kurtosis. According to literature, values for skewness and kurtosis between -2 and +2 are considered normal to prove normal univariate distribution. These values are reported in Table 2 and Figure 4 highlighting that data is completely normal.

Table 2: Data Normality.

| Variable | Skewness | Kurtosis | Normality Status |
|---|---|---|---|
| Quality of Information | -1.25 | 1.85 | Normal |
| Technological Infrastructure | 0.75 | -1.20 | Normal |
| Usability of Repositories | 1.10 | 0.80 | Normal |
| Digital Literacy | -0.50 | -1.00 | Normal |

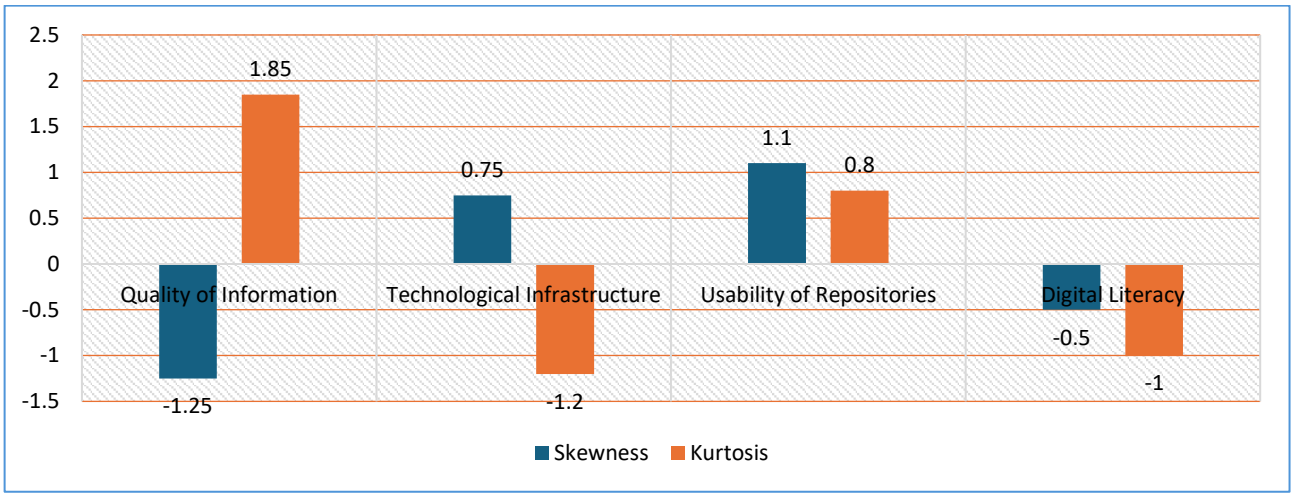


Figure 4: Skewness and Kurtosis.

The assessment of individual items reliability was carried out to examine the reliability of each question used to collected data from respondents (**Hair Jr. *et al.***, 2016; **Hafkesbrink**, 2021; **Edeh *et al.***, 2023). Along with the construct reliability, the reliability of each question or scale item is important to check to achieve the overall reliability and validity. For this purpose, this study considered factor analysis. While considering factor analysis, all the scale items having factor loading less than 0.7 were deleted from the study and items having factor loading higher than 0.7 were retained. In this study, three scale items were found factor loading less than 0.7, therefore, deleted from the current study. The construct reliability is based on the assessment of individual items reliability. It is a form of reliability used to determine the consistency of outcomes across items on the same test. The items having issues in the reliability were deleted during factor analysis. Therefore, the construct reliability was not compromised. The values of construct reliability are reported in Table 3 and Figure 5. Construct reliability was assessed by using composite reliability. These values proved that all the constructs are reliable.

Table 3: Construct Reliability.

| Variables | Construct Reliability |
|---|---|
| Quality of Information | 0.722 |
| Technological Infrastructure | 0.865 |
| Usability of Repositories | 0.708 |
| Digital Literacy | 0.798 |
| Digital Literacy | 0.756 |

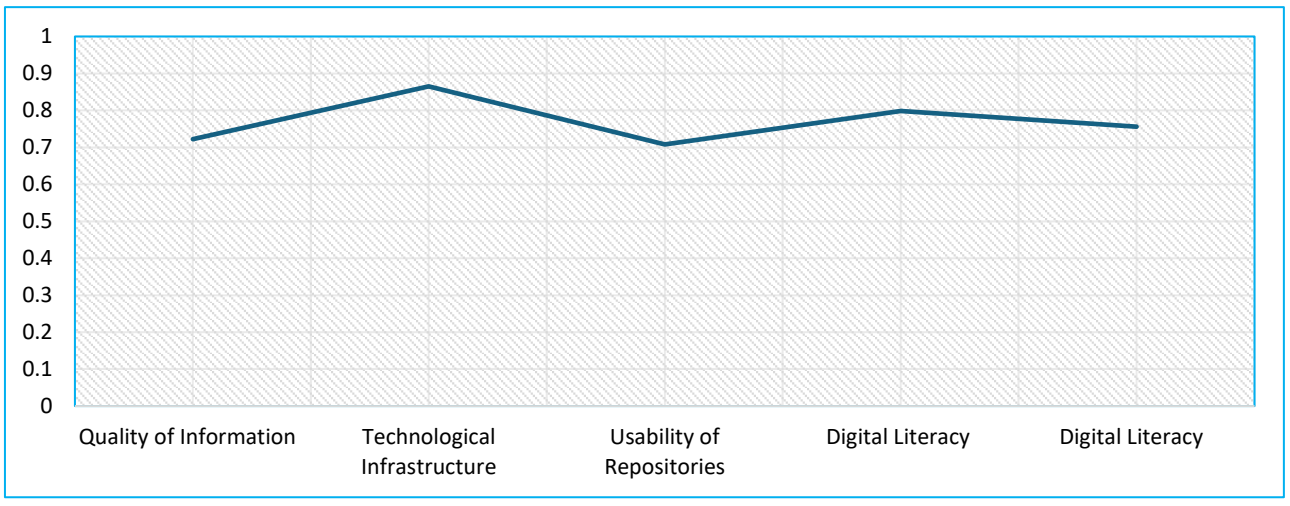


Figure 5: Composite Reliability.

Table 4 highlighted the discriminant validity (**Hafkesbrink**, 2021). It is the degree to which all the scale items of different variables must not be similar. There must be discrimination between the scale items of different variables. On the other hand, convergent validity is the degree to which all the scale items of same variables should be correlated which was examined by using average variance extracted (AVE). In this study, all the values of AVE were found higher than 0.5 which confirmed the convergent validity. Discriminant validity was examined by using Heterotrait-Monotrait ratio of correlations (HTMT) which is shown in Table 4 and Figure 6. All the values less than 0.9 is an indication that scale items of different variables have no similarity.

Table 4: HTMT.

| | Quality of Information | Technological Infrastructure | Usability of Repositories | Digital Literacy | Digital Literacy |
|---|---|---|---|---|---|
| Quality of Information | | | | | |
| Technological Infrastructure | 0.555 | | | | |
| Usability of Repositories | 0.635 | 0.599 | | | |
| Digital Literacy | 0.489 | 0.697 | 0.801 | | |
| Digital Literacy | 0.623 | 0.452 | 0.637 | 0.788 | |

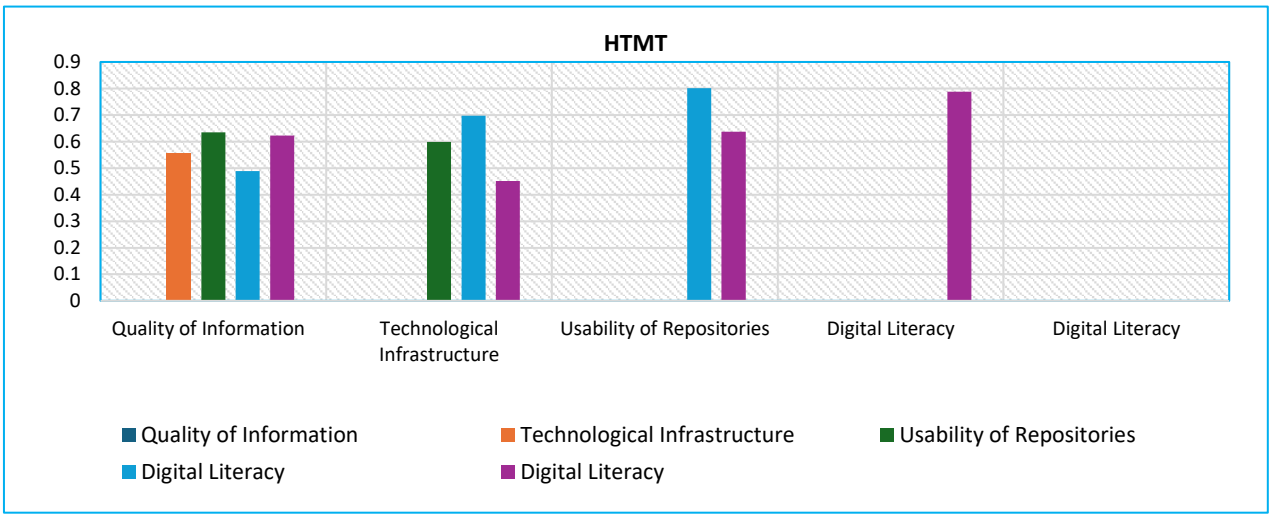


Figure 6: HTMT.

Results of the hypotheses are grounded on six hypotheses. These six hypotheses include three direct effect hypotheses and three moderation effect hypotheses. Results of these hypotheses are reported in Table 5 and Figure 6. Hypotheses results are grounded on t-statistics and beta coefficient, t-statistics was observed to check the significance of the relationship and beta coefficient was used to examine the direction of the effect, that whether it is positive or negative (**Hair Jr. *et al.***, 2021; **Hair Jr. *et al.***, 2014; **Hair; Alamer**, 2022; **Edeh *et al.***, 2023). Results indicated that the direct effect of quality of information, technological infrastructure and usability of repositories on user perception of information communication and OA repositories is significant because the t-statistics are higher than 1.96. Additionally, positive signs with beta value highlighted the positive contribution of quality of information, technological infrastructure and usability of repositories. On the other hand, one moderation effect of digital literacy is significance between usability of repositories and user perception of information communication and OA repositories. However, the other two moderation effect are not supported.

Table 5: Hypotheses Results.

| Hypothesis | Hypothesized Relationship | β | Significance Value |
|---|---|---|---|
| Hypothesis 1 | Quality of Information -> User Perception of Information Communication and OA Repositories | 0.256 | 2.999 |
| Hypothesis 2 | Technological Infrastructure -> User Perception of Information Communication and OA Repositories | 0.089 | 1.985 |
| Hypothesis 3 | Usability of Repositories -> User Perception of Information Communication and OA Repositories | 0.158 | 3.521 |
| Hypothesis 4 | Quality of Information* Digital Literacy -> User Perception of Information Communication and OA Repositories | 0.065 | 1.632 |
| Hypothesis 5 | Technological Infrastructure* Digital Literacy -> User Perception of Information Communication and OA Repositories | 0.096 | 0.895 |
| Hypothesis 6 | Usability of Repositories* Digital Literacy -> User Perception of Information Communication and OA Repositories | 0.258 | 0.3268 |

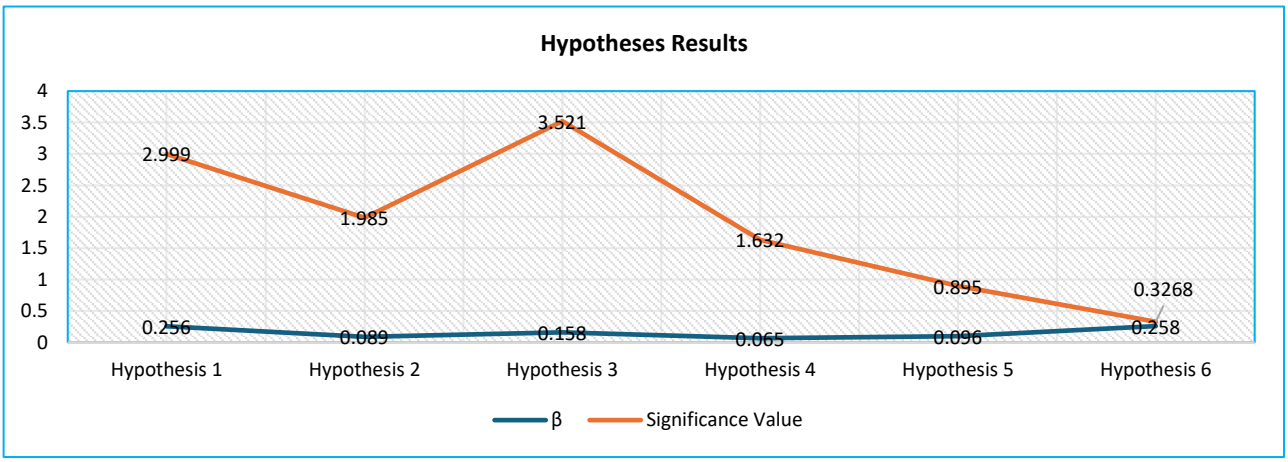


Figure 6: Hypotheses Results.

## 5. Discussion

Although the extensive efforts made by various institutions in China, the OA repositories in academic research face significant challenges related to quality of information, technological infrastructure, and usability. Therefore, to address this issue, the current study considered identifying new dimensions of OA. The objective of this study is to identify new dimensions of user perceptions of information communication and OA repositories in academic research in China. Six hypotheses are proposed based on the direct effect of quality of information, technological infrastructure, usability and moderation effect of digital literacy. The support for Hypothesis 1 underscores the pivotal role of information quality in shaping user perceptions of OA repositories. It was observed that high-quality information ensures accuracy, relevance, and reliability, which builds user trust and satisfaction. These results are also confirmed by previous studies in various other contexts (**Ghanem; Al-Shammari**, 2024; **Shiloach *et al.***, 2010). When users encounter well-curated, credible, and latest information, their confidence in using a specific repository for communication as well as knowledge-sharing increases. Likewise, high-quality information facilitates effective decision-making, fostering a perception of repositories as valuable and dependable tools for academic and professional needs. This finding associates with prior research that highlights the importance of content quality in digital repositories and platforms. Hence, quality of information has positive influence on user perception in China.

The confirmation of Hypothesis 2 highlights the significance of robust technological infrastructure in enhancing user perceptions of OA repositories. This study proved that advanced technological features such as user-friendly interfaces, high-speed access, seamless integration, and reliable performance significantly contribute to a positive user experience. Similar with these findings, previous studies highlighted position contribution of technology in user satisfaction (**Ashfaq *et al.***, 2020; **Mahmood *et al.***, 2000). The finding underscores the need for continuous technological upgrades to meet the evolving user expectations as well as leverage emerging innovations. A strong infrastructure reduces the technical barriers and in the similar way ensures accessibility, fostering efficient information communication. Institutions managing OA repositories must prioritize infrastructure development to support diverse user needs and ensure smooth repository functionality in China. The third direct effect was examined through hypothesis 3 which illustrates the importance of usability in influencing user perceptions. Repositories that are intuitive, easy to navigate, as well as equipped with most effective search and retrieval tools are more likely to gain user approval. This hypothesis is supported which highlighted the strong focus by the management of repositories in China on their usability. High usability reduces cognitive effort and enhances efficiency, which is particularly critical for time-sensitive academic and professional users. In consistent with this study, previous studies also highlighted the important connection between usability and repositories (**Subiyakto *et al.***, 2021). These findings suggested that developers as well as managers should focus on usability testing and feedback mechanisms to ensure repositories remain responsive to user preferences. Finally, this study highlighted the important role of digital literacy between dimensions and user perceptions of information communication and OA repositories. The role of digital literacy was examined by using hypothesis 4, hypothesis 5 and hypothesis 6. Results of the study did not support hypothesis 4 and hypothesis 5. Thus, digital literacy does not influence the relationship between the first two dimensions (quality of information and technological infrastructure) and user perceptions of information communication and OA repositories. Hypothesis 6 is supported showing the positive influence of digital literacy between usability of repositories and user perceptions of information communication and OA repositories. Digital literacy strengthens the relationship between usability of repositories and user perceptions of information communication and OA repositories

## 6. Conclusion

This study identified three new dimensions of user perception of information communication and OA repositories. User perception of information communication and OA repositories is dependent on three dimensions which include: quality of information, technological infrastructure and usability of repositories. Quality of information related to the OA repositories helps the user to produce quality in various research activities. Similarly, technological infrastructure is key to accessing quality information. The latest technological infrastructure helps the users to extract valuable information. In addition to the quality of information and technological infrastructure, usability of repositories is key to increase user satisfaction. Usability provides capacity through an established system which provides a condition for its users to perform the tasks safely, effectively, and efficiently while enjoying the experience. Additionally, digital literacy among the users of OA repositories can also help to increase user perception of information communication and OA repositories.

### 6.1. Implications

This study identified quality of information, technological infrastructure and usability of repositories as new dimensions of user perception of information communication and OA repositories. These dimensions started a new debate in the field of OA repositories leading to practical implications. For instance, this study highlighted the positive contribution of quality of information in user perception. The practitioners in China should enhance the quality of information available in various platforms of OA repositories. Furthermore, this study introduced valuable implications in relation to technological infrastructure and user perception. Management of OA repositories can enhance user perception by

introducing technological infrastructure. Since the improvement in technological infrastructure has the potential to promote extraction of valuable information. Thus, technological infrastructure has the ability to enhance user satisfaction leading to an increase in positive user perception. Finally, this study identified the positive role of usability of repositories. Management of OA repositories in China provide facility for users to perform the tasks safely, effectively, and efficiently by promoting usability of repositories.

### 6.2. Future Directions

This study highlighted three important dimensions of user perception of information communication and OA repositories which include: quality of information, technological infrastructure and usability of repositories. However, future studies can explore various other dimensions which may influence user perception. The other important dimensions may include: reliability, responsiveness, assurance and empathy, therefore, future studies should explore these dimensions in relation to user perception of information communication and OA repositories. Furthermore, this study introduced digital literacy as a whole construct, however, it is valuable to examine various dimensions of digital literacy. These dimensions include: basic usage, application, development, and transformation. Hence, future studies should examine the role of digital literacy by considering basic usage, application, development, and transformation.

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