

Knowledge Discovery Using Citation Connections: Innovative Research Tool

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Abstract

When database dissertation publishers launch a new feature, it creates excitement among researchers. But what is most important is knowing if this new feature lives up to expectations. The purpose of this research was to test the Citation Connections discovery tool from ProQuest Dissertations & Theses Global. The tool provides researchers with insights into a connected network that delivers comprehensive research on a topic through knowledge deliverables in the form of fundamental research with highlighted citation, and similar dissertations with similarity index and shared references. An exploratory study was conducted to test the features of Citation Connections. Cluster sampling method was used to recruit 189 participants from three leading institutions from a vanguard university including research scholars, supervisors and librarians. The goal was to obtain a sufficiently large sample size to identify trends and provide a nationwide perspective on Citation Connections in India. The efficacy of Citation Connections was evaluated using SurveyMonkey. The study demonstrated highly significant (p value 0.00) that Citation Connections lives up to its promise to connect dissertations and theses to a network of 196 million journal articles, conference papers, books, preprints, data sets, and patents, all linked by 2.2 billion citations. Web of Science users consider dissertations and theses crucial for a comprehensive understanding of research topics.

Keywords: Research Tool, Citation Connections, ProQuest Dissertations & Theses Global, Electronic Thesis and Dissertation (ETD), Literature review

1. Introduction

The introduction of new features by database dissertation publishers generates excitement and anticipation within the research community. Researchers eagerly anticipate advancements that promise to enhance their research experience. Citation Connections (Figure 1) is a discovery tool launched by ProQuest Dissertations & Theses Global. The tool provides researchers with insights into a connected network that delivers comprehensive research

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on a topic through knowledge deliverables in the form of fundamental research with highlighted citation, and similar dissertations with similarity index and shared references. It is crucial to conduct a critical evaluation to determine whether these new features truly meet expectations. To gain a comprehensive understanding of their impact and effectiveness, it is essential to delve into existing literature and examine the experiences and insights of scholars who have utilized similar tools and functionalities.

By conducting a thorough literature review, valuable insights have been uncovered, allowing for the identification of any gaps in knowledge. This process contributes to the discourse surrounding the efficacy and potential of new features introduced by database dissertation publishers. Additionally, the underutilization of Electronic Theses and Dissertations (ETDs) by researchers becomes evident when examining the bibliographic citation lists in research publications (Goodfellow 2009, Ferdinand-James 2022). Despite reports indicating that ETDs are circulated 100 times more frequently than traditional theses according to Moxley (2004), the specific extent to which these ETDs are searched, retrieved, and utilized, as well as their impact on scholarly work, remains largely unknown. Surprisingly, there is a lack of literature dedicated to the review of ETDs, which can be attributed to the fact that many scholars are unfamiliar with global ETD repositories unless they have access through specific ETD databases provided by leading universities. This lack of awareness is unfortunate because ETDs have the potential to greatly benefit research scholars across all disciplines and countries. However, this gap in literature search has been addressed with the introduction of an innovative research tool called 'Citation Connections' developed by ProQuest. This tool has significantly enhanced the international repository of ETDs and provides numerous benefits to the scholarly community.

Scholars now have the advantage of electronically reviewing research from anywhere in the world (Richardson et.al 2008), particularly benefiting those in developing countries like India with its diverse linguistic landscape. With a simple click on the Citation Connections icon, researchers can conveniently retrieve and review related foundational research and similar dissertations, all presented on a single page. This resource has proven to be an invaluable asset for literature search and exploration, effectively bridging the gap and facilitating scholarly Connections among researchers worldwide. Given the significance of this innovative discovery tool, the 'Citation Connections,' launched by ProQuest, it is important to test its efficacy and determine if it lives up to the expectations set forth by database dissertation publishers.

Objectives

The research question posed in the study was to test the efficacy of the Citation Connections discovery feature. The objectives of the investigation were twofold: firstly, to acquaint the participants with the features and functionality of the Citation Connections discovery tool; secondly, to ascertain the advantages and facilitating elements associated with the tool by examining its impact on the research process, enhancement of citation quality, and streamlining of information retrieval procedures. Additionally, the study aimed to gain insight into user experiences, encompassing evaluations of user satisfaction, identification of challenges encountered during tool usage, and solicitation of feedback for potential enhancements aimed at improving usability.

Methods

An exploratory study was undertaken to estimate the efficiency of Citation Connections. The sample size calculation used was $Z^2 \times (1-p)/m^2$ (where, p = probability score, $Z = 1.28$ with 80% confidential interval and standard marginal error of 0.05). The estimated sample size was 164, adding 15% (considering dropout) the arrived sample size was 189 and this included 110 research scholars, 65 supervisor and 14 librarians from a leading university in India (Institution Human Ethics Committee (CARE IHEC -II, Approval Ref. No. IHEC-II/0368/23). Cluster sampling technique was employed to recruit participants from the affiliated three institutions within the university were at the forefront of subject-specific electronic theses and dissertations (ETD) development, as evidenced by their output and submission as per statutory protocol. This strategy was adopted to provide a representative nationwide perspective on the application of Citation Connections. Contact information of the identified institution was obtained, and the heads of departments were then approached via email and telephone and the study was explained. Participant information sheet was provided with the link for data collection. Support was sought from the institutions to inform their faculty, research scholars, and librarians inviting them to participate in the study. An orientation program on “Citation Connections” and free access to Citation Connections for 15 days was provided. To ensure consistency across multiple sites, a standardized email invitation was used for recruitment, and all data was collected through a single online platform, namely SurveyMonkey. This approach helped maintain uniformity in the recruitment process and streamlined data collection. The survey instrument was developed based on researchers’ working knowledge. A pilot study was conducted at a nursing college for tool validity, to evaluate the survey’s user-friendliness, completion time, structure, and comprehensibility of the questionnaire (Shi et. al 2022). It consisted of demography, multiple-choices, and open-ended questions requiring written responses. Based on the pilot study results, modifications were made to the semi-structured items, providing participants with a list of response options and a comment box. The final survey comprised two sections; Section I consisted of 10 items focusing on participants demographic variable, while section II comprised 15 questions related to participants’ adaptability to Citation Connections. Online survey was administered using SurveyMonkey, with an estimated completion time of approximately 10-15 minutes.

Results

In total 220 questionnaires were sent-out and 189 (Table 1) were returned this included 110 (58,2%) research scholars, 65 (34.3%) supervisor and 14 (7.5) librarians, among which 55.5 % were female compared to 44,5 % male. A range of research experience were noted among respondents and it was found that most of 47.1 % respondents had 10 to 15 years research experience, a quarter 15.9% had more than 15 years of research experience and least of 6.3 % had less than 5 years. To our surprise only 33.3 % members use ETD specific search engine for their literature search. It was also found that 73.5% respondents didn’t undergo any formal ETD training program and 9.5% were trained during their PG and for 12.7 % respondents the ProQuest ETD awareness program was the first training program. This was found to be statistically significant at p value of 0.000. This makes it crystal clear that training of database dissertation publisher has significantly

positive influence on the succent use of database and research review search strategy. This finding was further confirmed by the comparative p value of other demographic variables like neither the responce research experience, nor their position was found to be significant in using the search strategy. This specifies the felt need on the awareness program to researchers on the discovery tool.

The respondents were also asked to evaluate their working knowledge on Citation Connections, as such the acuity was measured based on three major domains on cognitive, affective and psychomotor aspect (Figure 2). Huge proportion of respondents ranging from 56.6 % and 47.6 % rated Strongly Agree to Agree stating that Citation Connections was an effective and easy to adhere discovery tool. The members were also asked to determine possible challenges that would compromise the use of Citation Connections and it was highlighted on the aspects of lack of training (42.3 to 42.4%), lack of accessibility (41.3 to 51.3%) and lack of awareness (42.3 to 52.9%).

Content analysis (Table 2) was done to identify the experience of responce on the application of Citation Connections, illustrated in the dialogue form of narration. Citation Connections was well received by the participants, as it gets activated through the integration of citation network and provides list of recommended sources. Citation Connections was found to offer many advantages to researchers, including:

1. Global access to the up-to-date research
2. Visibility to foundational research and the ability to gather similar dissertations
3. Enables electronic assessment of theses and dissertations
4. Facilitates easy to utilization of computer technology in literature searches
5. Motivates users to acquire valuable literature review skills
6. Provides an opportunity to gain proficiency in electronic publication
7. Reduces the need for physical library space, storage, and pilling expenses

There are unique components for the user to explore such as Full text PDF, Preview PDF and Abstract. A fascinating feature of 3 doted options in select panel enables discovery tips to demystify dissertations. Options like “modified search, recent search, save search and alert” were found to be noteworthy. The gap in literature was also well addressed, such that if a related document is not available on the topic, that topic was considered unique.

Discussion

A global digital collection of electronic theses and dissertations (ETDs) offers worldwide accessibility to the valuable research produced by graduate students at the master’s and doctoral levels (Goodfellow 2009). Prior to the establishment of this international repository, accessing such knowledge resources was challenging. GlobalProQuest ETD has opened access to researcher with a massive ETD platform and from better to best the introduction of the innovative tool called ‘Citation Connections’ surpasses traditional literature reviews found in specific search engines (Ahuja 2022). This technologically advanced medium

enables an extensive search strategy with diverse multimedia capabilities under the category of foundational research and similar dissertation. Universities worldwide are increasingly encouraging researchers to explore ETDs as part of their foundational research and to gain insights from similar dissertations. The evolution of Citation Connections must be shared with scholars to ensure optimal utilization of ETDs, as evidenced by the underutilization observed in bibliographic citation lists in various research journals.

The application of Citation Connections, along with familiarity with its features, has proven to be a valuable supplement to other resources. It allows users to explore large reference lists, review comprehensive literature reviews, and examine in-depth discussions of research methods typically found in theses or dissertations. Some research scholars and supervisors have utilized ETDs for academic discussions, to illustrate conceptual frameworks, or to exemplify specific aspects of the methods section. They have also directed their research candidates to ETD-specific databases, where graduate students and researchers can search for recent findings on specific subjects, refine conceptual frameworks, or build upon existing knowledge. The availability of Citation Connections expands access to theses and dissertations, providing nurses, students, faculty, and researchers with opportunities to explore documents that might otherwise remain unseen.

Experts believe that Citation Connections can enhance the level of scientific research in a country, increase visibility, and foster improved communication among researchers. Encouraging scientists to reference archived research is the most effective way to make scientific research widely accessible worldwide, thereby avoiding unnecessary duplication of efforts. Arunachalam (2004) emphasized the need for champions within institutions to promote the visibility of archived research and persuade scientists to contribute their papers to these repositories. Similarly, our study found that regular awareness programs on research tools generate excitement among researchers and enable a broader understanding of the research landscape. Citation Connections on ETD platform prove to be immensely useful for researchers, supervisors and to the information scientist such as the librarians to empower the research students with the 'Citation Connections' research tool. This study is limited to university on the procured ETD database and the study is pertinent to the Indian population and similar study can be undertaken at other part of the world.

Conclusion

Citation Connections was found by participants to be an innovative research tool that allows users to connect dissertations and theses to a vast network of scholarly resources, including 196 million journal articles, conference papers, books, preprints, data sets, and patents, all interconnected through 2.2 billion citations. It covers graduate research citations from 1864 to the present. By creating author accounts, researchers can claim their theses in Web of Science and start building recognition and citation records. Within the Web of Science community, dissertations and theses are highly regarded for providing crucial background knowledge on research topics. This groundbreaking study introduces the concept of 'Citation Connections', which will greatly enhance research scholars' understanding of accessing electronic theses and dissertations (ETD) libraries with Web of Science, empowering them to utilize the full potential of Citation Connections. The insights gained from this study will contribute to the development of future research and educational initiatives. Any technical or conceptual issues in this domain will be identified and addressed as necessary.

ENRICHING ETDs AND THEIR REACH

Furthermore, a long-term educational objective is to gather the necessary information to create an online educational intervention aimed at promoting the use of Citation Connections. Overall, this research confirms that the Citation Connections discovery tool from ProQuest Dissertations & Theses Global fulfils its intended purpose, connecting researchers to a wealth of scholarly resources and facilitating a more comprehensive exploration of research topics.

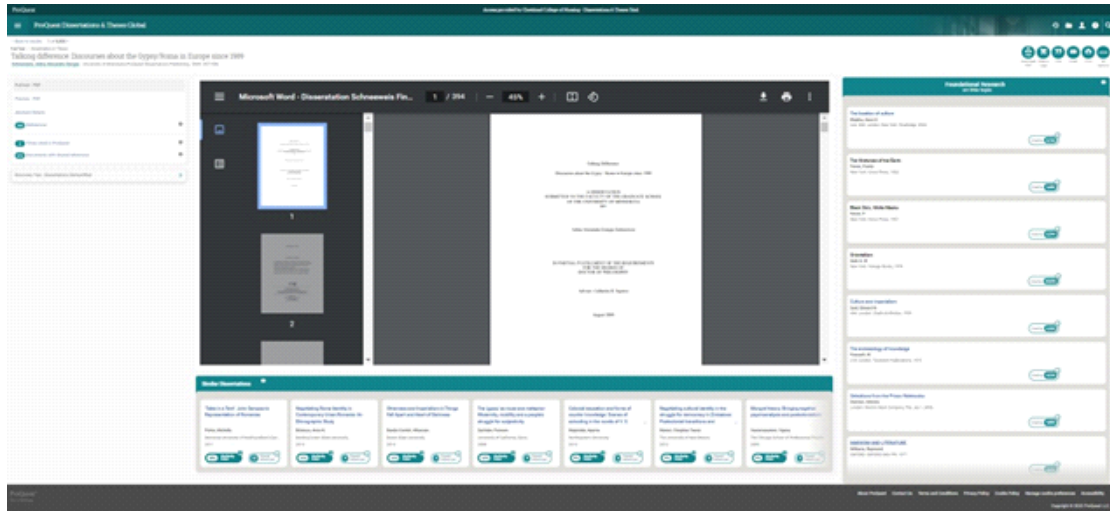


Figure 1 View of Citation Connections, a discovery tool by ProQuest

Table 1: Demography and significant contribution of Citation Connections

Demography	Frequency	%	Contribution of citationConnections				
			High	Moderate	Minimum	χ^2	P value
Gender							
Male	84	44.5	83	1	0	0.025	0.874NS
Female	105	55.5	104	1	0		
Involved in research as							
Scholars	110	58.2	1	0	0	2.320	0.509NS
Supervisor	65	34.3	1	0	0		
Librarian	14	7.5	0	0	0		
Research experience							
0-5 years	12	6.3	12	0	0	2.320	0.509NS
5-10 years	58	30.7	58	0	0		
10-15 years	89	47.1	86	2	0		
More than 15 years	30	15.9	13	0	0		

KNOWLEDGE DISCOVERY USING CITATION CONNECTIONS: INNOVATIVE RESEARCH TOOL

Used ETD specific search engine before							
Yes	63	33.3	61	1	0	0.271	0.603NS
No	126	66.7	126	1	0		

Previous training for ETD and others							
Attended a sessionby ProQuest	24	12.7	23	0	0	46.421	0.000S
During PG research	02	1.0	1	1	0		
During PhD research	18	9.5	19	0	0		
While working	6	3.3	6	0	0		
No training	139	73.5	138	1	0		

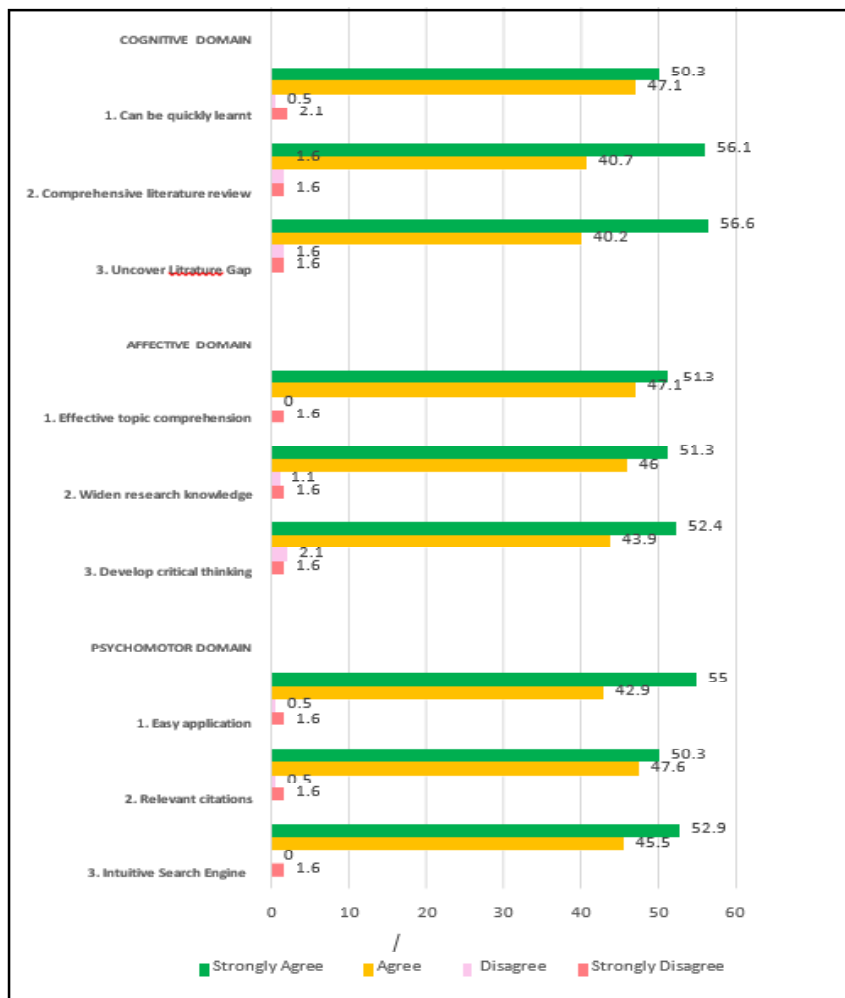


Figure 2 Acuity on Citation Connections

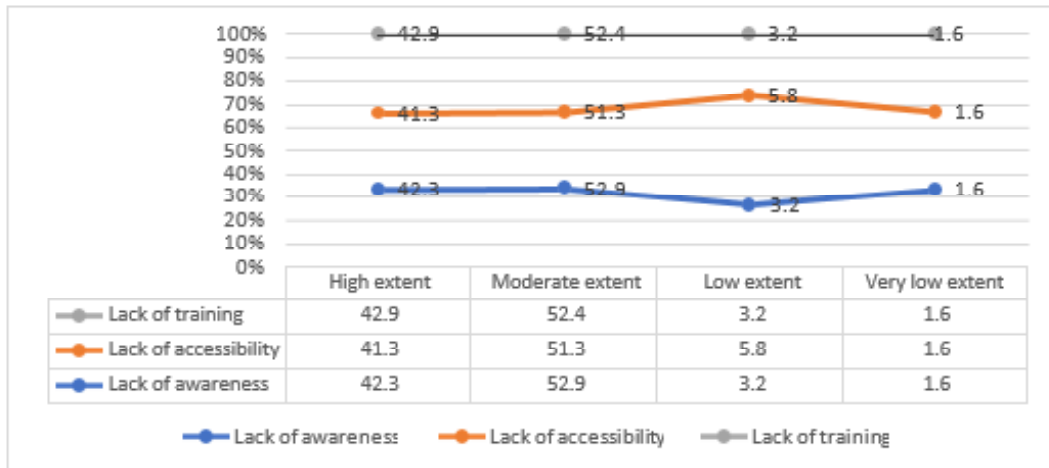


Figure 3 Measurement of challenges using Respondent rating.

Table 2 Experience of respondents using Citation Connections

Comments on Citation Connections:

Useful overall... Interlinking of citations... Easily accessible... Easy to search

Very easy application on filtration of topics, Foundation Study and Similar Study are fascinating It helps me to know the Foundation research topic and similar research on one screen

Quick and easy way to reach out with related studies Getting full thesis to understand everything about research Facilitates to retrieve ETD so easily.

Save option of ETD, with the login id and password for individuals for future reference Easy to find out what we need... and download as pdf and email send to our own email

The way we can use reference according to our preference we need...changing style of reference Finding out the relevant research...good content. To get the highly cited studies were easily

Similar research...similarity indexed...content segregation...and citation are excellent Ability of Citation of the article references in different referencing style

In citation they separated language, University option. It helps to find similar research study for reference.

and ability to save the study and review later...by downloading PDF and mailing it Visualize International university research - International university research

No lag, good to use, useful for study

Love the way it works. Yes, we want to use more of Citation Connections

Any difficulty experienced using Citation Connections

No-no-no

Nothing

Nil

Additional features you like to see

Adding Interconnect with PubMed

Citing index of journal publication

Multi-colored icon will be attractive

Citation score, no. of foundational research, no. of similar dissertation can be mentioned upfront

Reference

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