The Influence of Computer Proficiency in Technology Acceptance: A Bibliometric Review

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Abstract

With a focus on 17 papers indexed in Scopus between 1989 and 2025, this study offers a bibliometric review of the literature on the effect of computer proficiency in technology acceptance. The review investigates how user acceptance of technological advancements across several fields, including computer science, education, psychology, and business, is influenced by computer proficiency, which is defined as the abilities that facilitate efficient human-computer interaction. The results show that computer proficiency, which frequently has greater impacts than prior experience, is a reliable and substantial predictor of technological acceptance. Furthermore, this association is shaped by modifiers including age, computer phobia, and self-efficacy. Recent research has broadened toward useful applications in professional and educational contexts, whereas early studies mainly focused on computer phobia and basic proficiency assessment. According to the review, improving computer skills can boost user confidence, lessen digital inequality, and encourage wider acceptance of technology, especially in developing nations where digital literacy is still low. The necessity of explicitly incorporating computer skill into models of technology acceptance is emphasized in the paper's conclusion, which also calls for more empirical study in professional sectors and emerging economies.

Keywords: Computer Proficiency, Technology Acceptance, Bibliometric Review, Computer Science

الملخص

تركز هذه الدراسة على مراجعة ببليومترية للأدبيات المتعلقة بتأثير كفاءة استخدام الحاسوب (Computer Proficiency) على قبول التكنولوجيا، وذلك بالاستناد إلى 17 ورقة بحثية مفهرسة في قاعدة بيانات Scopus بين عامي 1989 و2025. تبحث المراجعة في كيفية تأثير كفاءة الحاسوب –المعرفة بالقدرات التي تسهل التفاعل الفعال بين الإنسان والحاسوب– على قبول المستخدمين للتقدم التكنولوجي في مجالات متعددة تشمل علوم الحاسوب، والتعليم، وعلم النفس، والأعمال. تظهر النتائج أن كفاءة الحاسوب تُعد مؤشراً موثوقاً وجوهرياً لقبول التكنولوجيا، وغالباً ما يكون تأثيرها أكبر من تأثير الخبرة السابقة. علاوة على ذلك، تتشكل هذه العلاقة عبر متغيرات معدلة تشمل العمر، والقلق من استخدام الحاسوب، والكفاءة الذاتية. وقد توسعت الأبحاث الحديثة نحو تطبيقات عملية في السياقات المهنية والتعليمية، بينما ركزت الدراسات المبكرة بشكل أساسي على القلق من استخدام الحاسوب وتقييم الكفاءة الأساسية. ووفقاً للمراجعة، فإن تحسين مهارات الحاسوب يمكن أن يعزز ثقة المستخدم، ويقلل من الفجوة الرقمية، ويشجع على قبول أوسع للتكنولوجيا، خاصة في الدول النامية حيث لا تزال محو الأمية الرقمية منخفضة. وتؤكد خاتمة الورقة على ضرورة دمج مهارات الحاسوب بشكل صريح في نماذج قبول التكنولوجيا.

الكلمات المفتاحية: الكفاءة الحاسوبية, قبول التقنية , مراجعة ببليومترية, علوم الحاسوب.

1. Introduction

A well-established interdisciplinary area of study that bridges computer science, psychology, and sociology is acceptance technology. While psychological and sociological research focuses on decision-making processes that predict changes in user behavior, computer science research typically focuses on system features (Amrouni & Arshah, 2018; Guo et al., 2018). The knowledge bases of other fields, such psychology and sociology, can be used to better understand how the nature of technology influences user behavior and usage (Tondeur et al., 2017). Computer science acceptance attitudes of users ought to be based on perceptions of technology attributes (for example functionality and usability), contextual factors (for example beliefs, values, social norms, community and infrastructure), and individual factors (for example, intrinsic motivation, habit, cost/benefit views, self-efficacy and anxiety) (Venkatesh et al., 2016).

Any technical innovation process starts with an individual's approval and acknowledgment, which maximizes incentives for individual creativity (Wu et al., 2018). As a result, researchers are now

interested in identifying the elements that influence users' acceptance or rejection of current technology. Users have created a variety of models and frameworks to explain the adoption of new technologies. These models and frameworks include elements that can promote user acceptance (Taherdoost, 2018). Computer science is important to note that acceptance and reliance by users are essential for any new technology to be improved and developed further. Furthermore, user engagement in the development of systems had a proclivity to acceptance function (Hamidi & Chavoshi, 2018).

Computer Proficiency is the skills related to communication between person and computer, human-computer interaction, and is dependent on prior computer experience and usage frequency (Sharit et al., 2019). Even if computer and internet technologies are now far more accessible and widely used in poor nations (Sharit et al., 2019), however, developing countries such as Libya, the use of these technologies is still low among people. For instance, a report by the internet world stats organization (Worldatlas, 2016) has categorized 1.4 million with 21.8% among Libyan citizens as Internet users, while 78.2% are not active users. For the optimal use of ICT, there is a need for both domain and interaction knowledge. Computer proficiency is the essential interaction knowledge required to use computers efficiently. Computers and the Internet can help seniors live better lives and perform better on essential tasks for independent living. To reap these benefits, the skills required to operate such systems must be available; thus, proper training is essential. The current levels of proficiency must first be determined in order to provide efficient and effective training.

Lastly, some of the relevant studies confirmed an effect computer proficiency on the level of user acceptance (Boot et al., 2016; Sharit et al., 2019; Zhang et al., 2017). Consequently, there is a need to inspect the moderator effect of the computer proficiency on the relationships studied in the technology acceptance models and how computer science would affect the level of acceptance of systems by users.

2. Previous Studies

One of the more developed fields of study is technology acceptance literature, which focuses mostly on how accepting behavior may affect actual technology use (Blut et al., 2021). According to the theory put forth by (Davis et al., 1989), If people think computers will help them perform better and are easy to use, they intend to use them. Different from basic computer experience,

computer proficiency includes abilities linked to prior use intensity and human-computer interaction (Sharit et al., 2019; Smith et al., 2000).

Scholars have shown that proficiency is a more accurate measure of real-world computer performance than experience alone (Arning & Ziefle, 2008; Barrett, 2018). Computer proficiency implies skills related to communication between person and computer, human-computer interaction, and varies from past computer experience and usage rate (Sharit et al., 2019; Smith et al., 2000). Computer proficiency is a better indicator of real computer performance than computer technological experience (Arning & Ziefle, 2008; Barrett, 2018), and computer experience has differential effects on the acceptance of technology than computer proficiency (Varma & Marler, 2013; Xu et al., 2017). Previous studies found that the use of advanced technology also had a positive correlation with computer proficiency (Boot et al., 2015), while computer anxiety correlates negatively with computer self-efficacy and computer attitude (Sengpiel & Jochems, 2016), indicating that self-efficacy might influence computer proficiency.

Additionally, research shows a positive correlation between technology use and computer ability (Boot et al., 2015), whereas self-efficacy and attitudes are adversely affected by computer anxiety (Sengpiel & Jochems, 2016). (Varma & Marler, 2013) further contend that gaining a lot of experience does not always increase acceptability, highlighting the significance of assessing proficiency as a separate concept. Collectively, these results highlight how proficiency plays a moderating role in determining the results of technology acceptance.

3. Methodology

The Scopus database was used to perform a bibliometric review that covered the years 1989- the year the first study on this subject was published- through July 2025. A bibliometric study was conducted on works that address both computer competency and technological acceptance in order to achieve the goals of this endeavor. As seen in figure 1, the chosen articles are from the following domains that are related to the goals: IT/IS, computer science, engineering, social science, psychology, and other disciplines. They are ranked in order of significance and were published in conferences and journals with a high impact factor known as "Scopus articles" in the Scopus database. A review of the items of interest for this inquiry was carried out after defining the criteria for the collected articles.

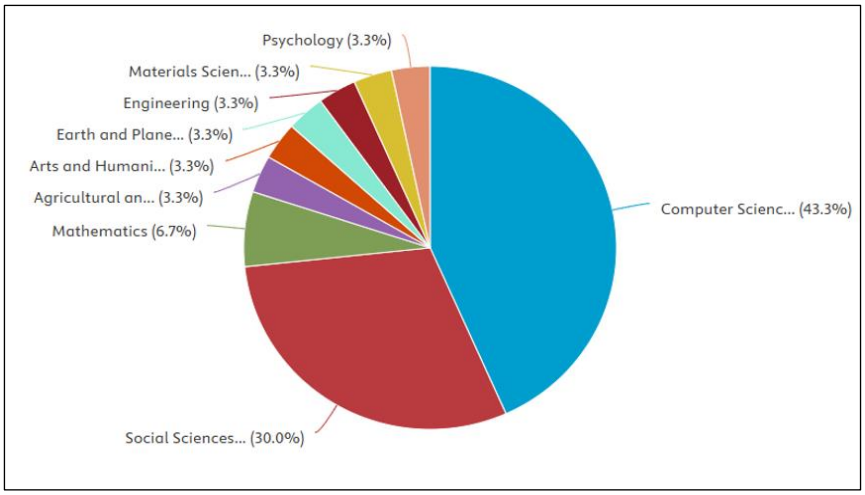

Figure 1: Documents by subject area

In order to make the search more thorough, articles that were within their themes were located utilizing this database's search engine. The keywords that were utilized as the phrases within the topic were "Computer Proficiency and Technology Acceptance" in English only. Only 17 papers were located, and abstracts were examined to ensure that the articles' content was actually related to the topic being reviewed.

4. Results

A total of 17 academic publications from 1989 to 2025 were found by the bibliometric analysis. Early research examined self-perceived computer skill and its impact on educational decisions (Evans & Simkin, 1989). These seminal publications emphasized how crucial proficiency is for lowering anxiety and raising engagement. Table 1, show these articles.

Table 1: The preliminary investigations of academic publications

NO.	Document title	Authors	Source	Year	Citations
1	Using Digital Inequality Framework to Evaluate a Technology-Delivered Intervention for Caregivers: Age, Education, and Computer Proficiency	Thompson, A.D., Sparks, C. , Wong, B., Caserta, M., Utz, R.L.	Journal of Aging and Health , 37(1-2), pp. 106–116	2025	2
2	Effects of Experience and Computer Proficiency on the Acceptance Behaviour of Accountants towards Usage of Cloud-Based Accounting Technology. A case of Nigerian accountants	Olomiyete, I.A.	Journal of Ecohumanism, 3(4), pp. 3303–3314	2024	0
3	Effects of extended use of an age-friendly computer system on assessments of computer proficiency, attitudes, and usability by older non-computer users	Sharit, J., Moxley, J.H., Boot, W.R., .Rogers, W.A.Czaja, S.J.	ACM Transactions on Accessible Computing , 12(2), a9	2019	7
4	Predicting computer proficiency in older adults	Zhang, S. Grenhart, W.C.M., McLaughlin, A.C., Allaire, J.C.	Computers in Human Behavior , 67, pp. 106–112	2017	23

5	Exploring the relationship between computer proficiency and computer use over time in the PRISM trial	Boot, W.R., Sharit, J., Czaja, S.J., Charness, N., Rogers, W.A.	Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) , 9755, pp. 300–307	2016	0
6	EasyAuthor-Supporting Low Computer Proficiency Teachers In The Design of Educational Content for Adult Illiterates	Chimalakonda, S., Nori, K.V.	Conference on Human Factors in Computing Systems - Proceedings, 2013-April, pp. 649–654	2013	3
7	Data mining techniques for identifying students at risk of failing a computer proficiency test required for graduation	Tsai, C.-F., Tsai, C.-T., Hung, C.-S., Hwang, P.-S.	Australasian Journal of Educational Technology , 27(3), pp. 481–498	2011	16
8	Cloze: An authoring tool for teachers with low computer proficiency	Hutchful, D., Matur, A., Cutrell, E., Joshi, A.	ACM International Conference Proceeding Series, 2369239	2010	9
9	Students' computer proficiencies, perceptions and experiences: An exploratory study	Badamas, M.A.	Proceedings of ISECON	2010	0
10	A proposed curriculum for computer proficiency for Nigerian tertiary institutions	Dunmade, A.O.	European Journal of Scientific Research, 24(4), pp. 487–490	2008	0
11	An assessment of basic computer proficiency among active Internet users: Test construction, calibration, antecedents and consequences	Bradlow, E.T., Hoch, S.J., Hutchinson, J.W.	Journal of Educational and Behavioral Statistics, 27(3), pp. 237–253	2002	27
12	The design of a web-based computer proficiency examination	Kinnersley, N., Mayhew, S., Hinton, H.S.	Proceedings - Frontiers in Education Conference, 2	2001	5
13	Assessing computer proficiency	Parker, Lorraine M.	Proceedings - Frontiers in Education Conference, 2, pp. 772	1998	0
14	The lecture classroom environment and its effects on change in computer anxiety of students taking computer proficiency classes	Schuh, K.L.	Journal of Educational Computing Research, 15(3), pp. 241–259	1996	8
15	Enrollment in computer courses by college students: Computer proficiency, attitudes, and attributions	Jo Campbell, N.	Journal of Research on Computing in Education, 25(1), pp. 61–74	1992	22
16	Relation of computer attitudes and computer attributions to enrollment in high school computer courses and self-perceived computer proficiency	Jo Campbell, N., Williams, J.E.	Journal of Research on Computing in Education, 22(3), pp. 276–289	1990	9
17	What Best Predicts Computer Proficiency?	Evans, G.E., Simkin, M.G.	Communications of the ACM , 32(11), pp. 1322–1327	1989	107

Initial Search Results (Query: "computer proficiency"): the initial broad search for "computer proficiency" in article titles resulted in 17 documents. An analysis of these documents is presented below based on type, country, affiliation, author, year, and funding sponsor.

a. Analysis by Document Type:

The search results consist primarily of two categories of documents: articles and conference papers.

• Articles account for 64.7% of all documents.

• Conference papers account for the remaining 35.3%.

As shown in figure2, this distribution is typical of academic research, demonstrating that findings on "computer proficiency" are predominantly distributed through peer-reviewed journals, with a significant share also presented at academic conferences prior to or during publication.

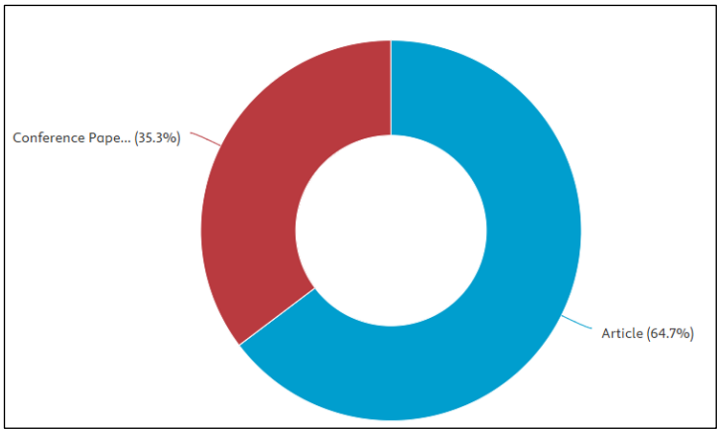

Figure 2: Documents by type

b. Analysis by Country or Territory

The geographical distribution of the publications is strongly concentrated in a few nations, with the United States making the largest contribution.

- 12 documents from the United States,
- 2 from India,
- 2 from Nigeria,
- 1 from Canada,
- 1 from Taiwan.

As shown in figure3, the data clearly show that research using the term "computer proficiency" in the title is primarily undertaken and published by authors linked with universities in the United States.

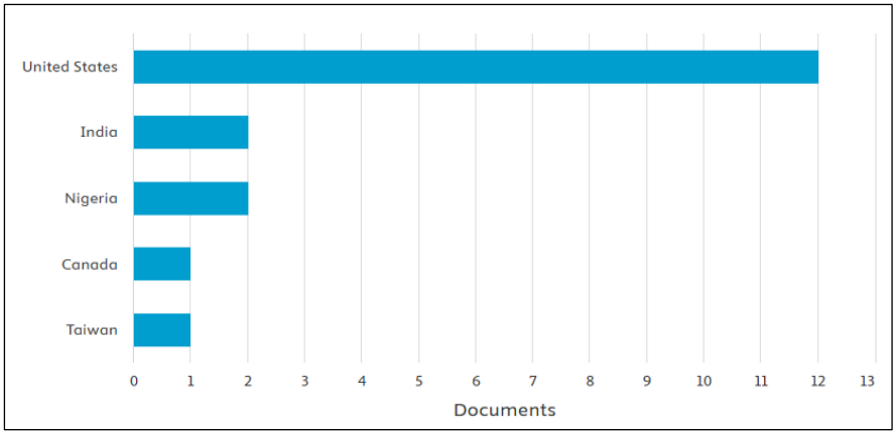

Figure 3: Documents by Country or Territory

c. Analysis by Affiliation

The study of institutional affiliations is consistent with the country-level statistics, indicating a high presence of US universities.

• Four leading institutions (2 docs each): Florida State University, Oklahoma State University, University of Miami, and University of Miami College of Engineering.

• Other affiliations (1 document): Digital Green, International Institute of Information, University of Illinois Urbana-Champaign, University of Nevada, Reno, Virginia Commonwealth University, and NC State University.

As shown in figure4, this topic appears to be the focus of research at a limited number of academic institutions in the United States. Notably, Florida State University and the University of Miami make significant contributions.

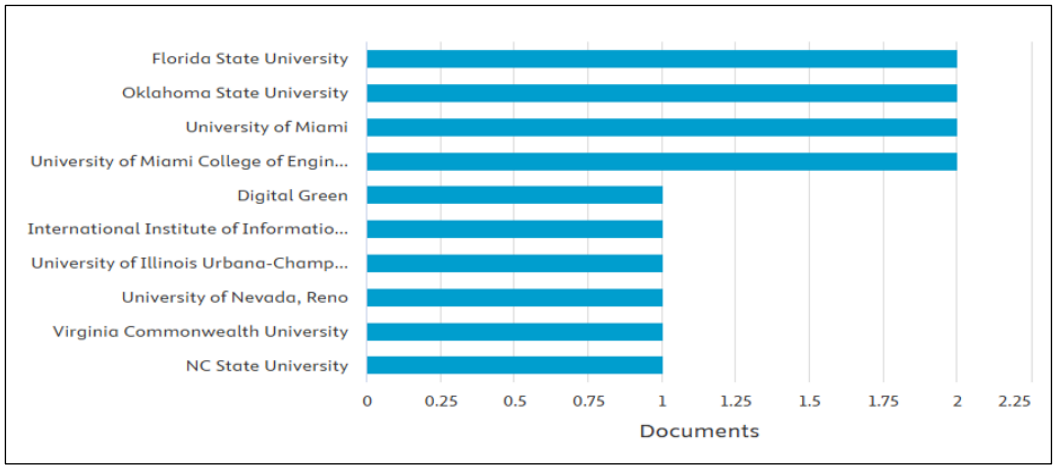

Figure 4: Documents by Affiliations

d. Analysis by Author

A small group of authors contributed several publications to this collection of 17 documents.

• Boot, W.R.; Charness, N.; Czaja, S.J.; Jo Campbell, N.; Rogers, W.A.; and Sharit, J. are the most frequent authors, each with two documents.

• Other authors include J.C. Allaire, M.A. Badamas, E.T. Bradlow, and M. Caserta, each with one document.

As shown in figure5, the findings indicate the presence of a core group of scholars who are especially active in this topic. The collaboration between these authors could be the topic of further network research.

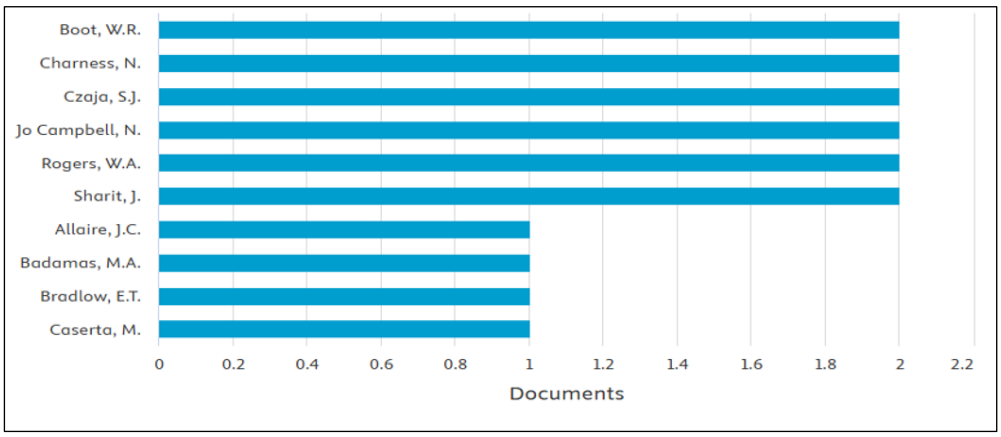

Figure 5: Documents by Author

e. Analysis by Year

The publication frequency over time has a shifting pattern with no discernible trend.

• Publication period: 1989–2025

• Peak year: 2010 (2 documents)

• General Trends: The number of publications per year is constantly modest, usually one document, with several years going without publishing.

As shown in figure6, research on "computer proficiency," as an explicit title keyword, has been continuing for decades but has not increased exponentially. Instead, it occurs as a topic of occasional interest, or it may be discussed using different terminology in other times.

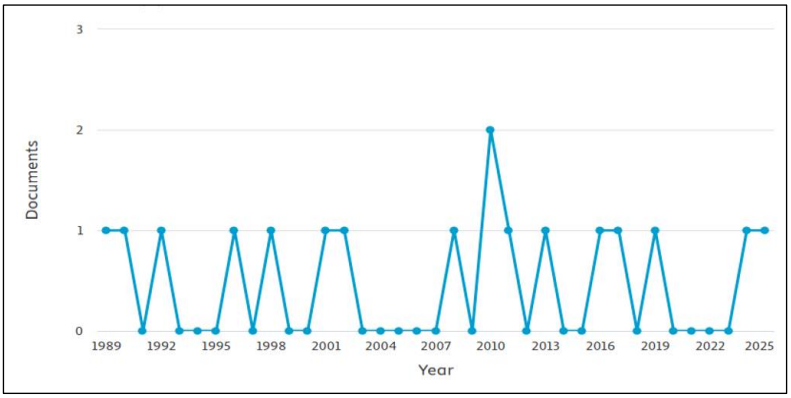

Figure 6: Documents by Year

f. Analysis by Funding Sponsor

The information in these documents comes mostly from US government health and research agencies.

- The National Institute on Aging has three documents.
- Three documents from the National Institutes of Health (NIH).
- Two documents from the US Department of Health and Human Services.
- There is one document for Teachers College.

As shown in figure6, the large financing from the National Institute on Aging and the National Institutes of Health clearly suggests that computer proficiency research is frequently framed in terms of health, wellness, and aging populations.

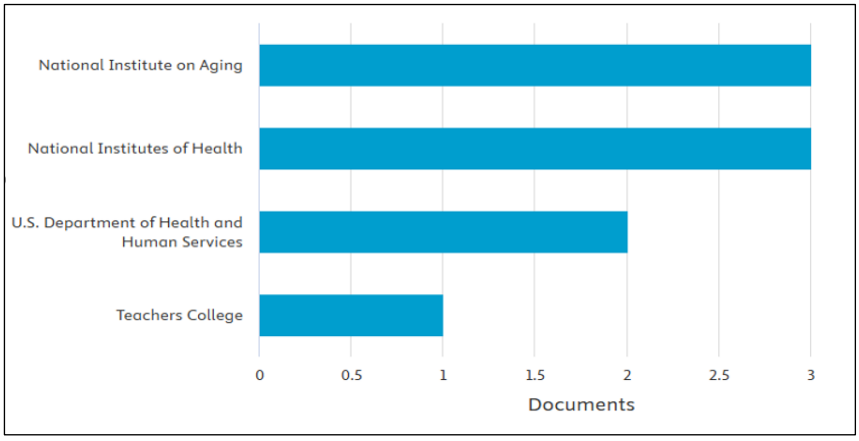

Figure 7: Documents by Funding Sponsor

g. Refined Search Results (Query: "computer proficiency" and "UTAUT")

To investigate the intersection of computer proficiency with a specific technology acceptance model, a refined search was performed. This search looked for documents containing "computer proficiency" AND ("unified theory of acceptance and use of technology" OR "UTAUT") within the title, abstract, or keywords.

This highly specific query yielded only one document:

- Title: Predictors of patients' acceptance of video consultation in general practice during the coronavirus disease 2019 pandemic applying the unified theory of acceptance and use of technology
- Source: Digital Health
- Year: 2023

The result from the refined search indicates that while "computer proficiency" is studied, its explicit connection to the UTAUT framework is extremely rare, representing a potential gap or niche in the existing literature.

5. Discussion

The review's bibliometric findings highlight a number of important trends in the research on computer skill and how it affects people's acceptance of new technologies. All things considered, the results highlight how computer skills consistently play a significant part in determining how people view, engage with, and eventually embrace technological advancements. According to the reviewed literature, competency is a better indicator of acceptance behavior than prior experience, indicating that confidence and skill in human–computer interaction is more important than simple technology exposure.

The moderating effect of computer proficiency on established technology acceptance models is a major theme that emerges. The evidence suggests that computer proficiency shapes constructs like perceived usefulness, behavioral intention, and ease of use, which are fundamental to frameworks such as the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Technology Acceptance Model (TAM). For example, users with higher computer proficiency exhibit greater self-efficacy and lower computer anxiety, which leads to higher rates of digital adoption, while those with limited skills tend to feel apprehension and resistance, which slows down digital adoption.

According to the chronological analysis, the majority of early research (1989–2005) focused on identifying and assessing computer competency, frequently in educational settings. These seminal publications outlined the psychometric underpinning for comprehending proficiency and emphasized how it affects students' attitudes toward technology and learning practices. However, more recent studies (2010–2025) have moved toward practical research, examining the effect of proficiency in age-friendly systems, digital literacy, and health technologies. This development reflects the larger cultural trend toward digital transformation, where competence is becoming a necessary skill for engagement in both the personal and professional spheres rather than a specialized issue.

There is a substantial theoretical and empirical opportunity due to the paucity of research that explicitly incorporates computer proficiency into accepted acceptance models, particularly UTAUT. The necessity for a methodical investigation of the ways in which proficiency interacts

with constructs like effort expectancy, performance expectancy, and facilitating situations is shown by the one study that was found to use this intersection. Future studies can produce more precise predictive frameworks that take into consideration differences in skill levels among user populations by incorporating computer proficiency as a variable or moderator into these models.

Lastly, bibliometric patterns support the idea that competency is a socio-cognitive concept that affects user attitudes, confidence, and sustained engagement with technology, rather than merely being a technical ability. Thus, increasing computer competency through focused education and training initiatives might be a calculated method to boost technology adoption, especially in developing countries where the digital revolution is still in its infancy. Therefore, empirical studies that incorporate proficiency into acceptance models, compare its impacts across cultures, and assess interventions meant to boost computer literacy and confidence should be given top priority in future research.

6. Conclusion

The existing literature on the impact of computer proficiency on technology acceptability has been methodically mapped and examined in this bibliometric evaluation. Computer competency, which is defined as the competencies necessary for efficient human-computer interaction, is a strong and substantial predictor of user acceptance of technology, according to an examination of 17 important studies published between 1989 and 2025. The results repeatedly show that proficiency has a greater impact on acceptance behaviors than just prior computer experience, highlighting the need to differentiate between the depth of usable skill and the breadth of expertise.

One important finding from this review is that computer skill is a key moderating factor. The overall trajectory of technology acceptance is shaped by its considerable interactions with important elements like age, self-efficacy, and computer fear. The acknowledged significance of computer skills in fostering digital inclusion among aging populations and reducing the digital divide is further highlighted by the substantial funding focus from health-oriented organizations such as the National Institute on Aging.

This review does, however, also point up important gaps in the literature. Significant prospects for future study are indicated by the stark geographic concentration of studies in the U S A and the dearth of researches that specifically incorporate computer skill into comprehensive models

of technology acceptance, like UTAUT. Empirical study is desperately needed in emerging economies, where digital literacy levels are frequently below ideal, and in a wider range of professional fields than those that have already been studied.

To sum up, improving computer skills becomes a crucial tactic for building user confidence, lowering acceptance obstacles, and advancing fair access to technology. Future studies should focus on explicitly incorporating computer competency as a fundamental feature inside well-established technology acceptance models in order to further this subject. Moreover, coordinated efforts ought to be focused on creating focused training programs and carrying out cross-cultural research to confirm these results in various technical and socioeconomic contexts.

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