# Role of Information Needs, Information Accessibility, Information Overload and Digital Literacy in Shaping Web Search Self-Efficacy

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Recommended citation:

**Hamid, Elnagi M; Shodiyev, Akbar** (2025). "Role of Information Needs, Information Accessibility, Information Overload and Digital Literacy in Shaping Web Search Self-Efficacy". *Profesional de la información*, v. 34, n. 2, e34205.
*https://doi.org/10.3145/epi.2025.ene.34205*

Received: 06-03-2025
Accepted: 10-04-2025

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**Abstract**

The present research investigates information needs assessment, perceived information accessibility, information overload, and electronic information literacy as antecedents to web search self-efficacy of organizational employees. It seeks to present a detailed picture of the psychological and informational factors that affect employees' self-assurance in web searching digital information environments. A quantitative method was employed, utilising data from 244 workers across various organisations. Highly reliable measurement scales from prior literature were used in measuring five primary constructs. Structural Equation Modelling (SEM) was executed with the help of STATA to test the measurement and structural models, measure relationships, and verify the significance of every hypothesised path. The results indicate that both information needs assessment and perceived information accessibility significantly influence web search self-efficacy. Further, information overload was found to be a partial mediator of the relationship between perceived information accessibility and web search self-efficacy. In contrast, electronic information literacy enhanced the relationship between information needs assessment and self-efficacy significantly. All the hypotheses put forward were statistically confirmed, emphasising the intricate but interrelated routes via which digital competence and information quality influence individual web-based information task confidence. This study enriches theoretical models of digital behaviour by incorporating cognitive overload and literacy mechanisms, and provides practical implications for designing interventions to develop employees' digital search competence.

**Keywords**

Web Search Self-efficacy, Information Needs Assessment, Information Overload, Digital Literacy, Organizational Information Behavior.

## 1. Introduction

In the online age, people increasingly use the web as their first point of reference for information retrieval in educational, business, and social settings. With the web-based systems becoming increasingly central to everyday life, it is imperative to understand what drives individuals' faith in searching for information successfully (**Ahmed; Hasnine**, 2023). The web search self-efficacy construct defined as people's beliefs in their ability to locate acceptable information from the web has emerged as a critical concept in information science and digital literacy (**Arazo *et al.***, 2023). Simultaneously, constraints such as information overload, unstable digital competency, and incoherent information needs continue to hamper effective web search behavior (**Fan; Lin**, 2023). To this extent, the present study examines how contextual and individual factors namely, information needs assessment, perceived ease of access to information, and electronic information literacy impact information retrieval self-efficacy and its broader meaning within the context of digital learning and communication (**Akter *et al.***, 2024).

Previous research has demonstrated that internet-based seeking behaviour for information is shaped by several interdependent factors, including cognition at an individual level, digital infrastructure, and the environment of information (**Hong *et al.***, 2023). Information must be assessed, or the ability to consciously identify and articulate what information is sought, has been found to significantly improve outcomes for searching and result in more focused digital interaction (**Angelina; Fianty**, 2023). Similarly, perceived availability of information the belief that online information is easily accessible has been found to have a direct correlation with motivation for search and perceived control during search (**Belay; Bramo**, 2017). A growing number of studies also report the negative impact of information overload on cognitive performance and decision-making in web environments (**Ekasari *et al.***, 2024). **Holm** (2025) identified that too much information may cause confusion as well as decreased search efficiency, particularly for individuals who have lower digital literacy. Web surfing, critical source analysis, and adaptation to adaptive search settings were found to be best predicted by electronic information literacy (EIL), however, (**Shahrzadi *et al.***, 2024). The interactive dynamics between these variables needs assessment, accessibility, overload, and literacy make up a complex ecosystem that is in charge of deciding how users become confident while retrieving information from the internet.

Despite the extensive body of work on web search information-seeking behaviour, there remain several gaps in the research in explaining web search self-efficacy processes. For starters, while previous literature has treated information needs assessment and digital literacy as independent constructs, few studies have empirically examined how these predictors interact and affect self-efficacy in an integrated model (**Farkhod; Dilyorjon**, 2024; **Hussain; Phulpoto**, 2024; **Jiang**, 2025). This piecemeal framework does not take into consideration the potential that users may possess well-defined information needs but minimal digital literacy with which to respond to them effectively. Second, while perceived information accessibility has been associated with enhanced user engagement, its potential to generate adverse effects specifically through information overload has yet to be adequately examined in empirical frameworks (**Orakova *et al.***, 2024; **Quraishi *et al.***, 2024). This results in the oversimplification of accessibility as an entirely beneficial factor, without considering the potential that excessively accessible information can lead to mental stress and a decrease in confidence in information-related tasks. Thirdly, the mediating and moderating effect of information overload and electronic information literacy has seldom been added to models that attempt to explain how digital consumers build self-efficacy in information searching (**Jokisch *et al.***, 2023). Omission of this avoids the complexity of real-life web search contexts, where users' sheer amount of information and differences in digital competence directly impact their outcomes. Furthermore, previous studies employ generalised digital literacy measures instead of focusing on electronic information literacy, as indicated by **Liu *et al.*** (2025), **Rasool *et al.*** (2024) and **Rodon and Meyer** (2018), which describes the cognitive and practical abilities directly transferred to web search spaces. Thus, an integrative model of the direct, mediating, and moderating roles of critical mental and environmental factors in web search self-efficacy is needed. This study addresses these limitations by developing and empirically testing a comprehensive model that incorporates these constructs, thereby enhancing our understanding of the determinants and antecedents of self-confidence in online information seeking behaviour.

This study investigates the intricate relationships between cognitive processing, perceived web environments, and users' confidence in web search performance. The study is particularly interested in examining the effects of information needs evaluation and perceived information accessibility on web search self-efficacy. It further investigates the mediating role of information overload in these relationships and examines the moderating role of electronic information literacy. The primary research questions guiding this study are: (1) How much do perceived accessibility and information needs assessment influence web search self-efficacy? (2) Does information overload mediate the influences? (3) Does electronic information literacy modify these effects? These questions are worded to expand our understanding of cognitive and contextual determinants of digital information behaviour.

## 2. Literature Review

The exponential growth of digital information and increasing reliance on the internet as a primary source of information have significantly altered the method of searching and processing information (**Buchan *et al.***, 2024). With ever-increasing online content, users frequently struggle with information overload a psychological condition where the amount, complexity, and ambiguity of information surpass their capacity to process it. Such overloading can hamper decision-making, increase the stress factor, and decrease search effectiveness (**Zhang *et al.***, 2024). A study has proven that overexposure to internet content results in a decrease in confidence in searching for information quickly. Cognitive load theory supports this by hypothesising that task performance decreases when cognitive resources are strained. Effectively, information overload damages self-efficacy by inducing confusion and fatigue in web browsing, particularly for people without systematic search strategies (**Wynen *et al.***, 2025). Additionally, overloading can lead to information avoidance, selective exposure, or overdependence on surface signals rather than judgmental evaluation, all of which can erode someone's confidence in their ability to use the internet effectively (**Vivion *et al.***, 2024).

Conversely, digital literacy operates to mitigate the negative consequences of information overload and enhance web search self-efficacy (**H. Wang *et al.***, 2023). Digital literacy involves a set of skills that include the capacity to find, assess, and effectively use digital information (**Quraishi *et al.***, 2024). People possessing high digital literacy are better at

eliminating irrelevant material, using advanced search strategies, and evaluating source credibility critically, which, in combination, enhances their self-efficacy in web search activities (**Asmayawati *et al.***, 2024). Studies highlight that digital literacy serves as a buffer, enabling users to manage a vast amount of information more strategically and reduce cognitive dissonance when navigating online (**Zhou *et al.***, 2024). Even the transactional model of stress and coping suggests that participants who have more coping resources i.e., digital literacy can cope with information stressors and thereby sustain higher levels of self-efficacy (**Jokisch *et al.***, 2023). Thus, the interlink between information overload and digital literacy is determinative. Whereas overload can diminish search performance, digital literacy enhances users' control and confidence, underpinning a sense of competence within an increasingly complex digital information universe.

## 2.1. Hypotheses Development

Assessment of information needs is the initial stage of the information-seeking process, which entails an individual's ability to identify, verbalise, and clarify their informational needs. Empirical evidence indicates that such capability essentially establishes the success and effectiveness of online search activities. **Ekasari *et al.*** (2024) indicated that a well-defined information need triggers purposeful navigation and promotes focused searching behaviour, which translates into improved search results. In the same spirit, **Opriel *et al.*** (2024) information behaviour model stressed problem recognition and cognitive consciousness in guiding the search process. Empirical work like that of **Angelina and Fianty** (2023) identified that those who exhibit high information needs awareness tend to be goal-oriented and self-assured while navigating web-based information spaces. Also, **Y. Wang *et al.*** (2023) Information Search Process model describes how the initial stages of need identification influence the emotional and cognitive style of the user during the overall retrieval process. The specificity and clarity of the need inform the user's selection of sources, search approach, and relevance judgment, which in turn support self-perceived search capability.

Empirical findings suggest that those who are adept at judging their information needs are likely to form organised search plans, thereby enhancing web search self-efficacy. If users can specify their needs, they become better equipped to choose the right keywords, select useful sources, and assess the retrieved information against the purpose of their search. This mental preparation will increase the perceived control and competence of the user in performing web search activities, thereby enhancing self-efficacy beliefs. **Bandura** (2001) social cognitive theory emphasises that self-efficacy is shaped by mastery experiences and mental processing, both of which are complemented by correct needs assessment. **Apuke *et al.*** (2024) studies affirm this idea, demonstrating that unambiguous identification of needs is related to higher satisfaction and confidence in tasks of information retrieval online. Moreover, people with highly developed needs assessment skills minimize trial-and-error searches less, which in turn brings lower frustration and more positive attitudes toward their web searching capability. These findings reflect a clear and significant direct effect of information needs assessment on one's perception of being capable to efficiently retrieve information by means of the web and have a solid empirical basis for the conjectured hypothesis.

H1: Information needs assessment significantly influences the information retrieval on the web self-efficacy.

Perceived information accessibility is a subjective sense of ease of using appropriate information on the internet (**Mao *et al.***, 2024). Empirical studies on digital behaviour and human-computer interaction have confirmed that if information is perceived to be easily accessible, people prefer to conduct search activity with efficiency and confidence (**Merlici *et al.***, 2025). Based on the research by **Cui *et al.*** (2024), user expectations regarding the accessibility of digital content and its retrievability influence their initial motivation and persistence in searching. Additionally, empirical studies by **Orakova *et al.*** (2024) indicated that users' ease of information retrieval perceived enhances users' confidence, which further constructs a stronger information retrieval self-efficacy (**Buchan *et al.***, 2024). Technology Acceptance Model (TAM) has been used here also, to the effect that perceived ease of use is a key driver for behavioural intentions and perceptions of proficiency (**Glatz; Lippold**, 2023). If individuals perceive information as not only plentiful but also readily searchable, they tend to carry out web tasks with added ease and proficiency.

Perceived availability of information plays an important role in influencing how people go about web-based search tasks (**Akter *et al.***, 2024). People who tend to believe that online information is easily available will work harder and last longer to search, thereby having higher self-efficacy beliefs (**Angelina; Fianty**, 2023). This connection is supported by the cognitive-affective model, where perceived ease of access reduces anxiety and encourages exploratory behaviour to experiment with different sources and respecify search queries confidently (**Cui *et al.***, 2024). Research by **Li *et al.*** (2023) demonstrated that perceived ease not only enhances users' satisfaction but also leads to increased frequency and intensity of web search usage. Such a virtuous feedback loop, where ease perceived produces a positive experience, builds mastery and, in turn, web search self-efficacy (**Y. Wang *et al.***, 2023). Furthermore, in highly interactive online settings, individuals who sense high accessibility develop adaptive strategies, for example, applying filters, keywords, and Boolean operators more effectively and hence becoming more persuaded that they can deal with complex information tasks (**Shahrzadi *et al.***, 2024). Thus, empirical results indicate that when people perceive digital information to be accessible, they create a positive feedback cycle among effort, performance, and belief in search ability so that perceived accessibility becomes a causal precursor to web search self-efficacy.

H2: Perceived information accessibility significantly influences the information retrieval on the web self-efficacy.

Information overload, or a greater amount of data than capacity for cognitive processing can handle, has also been cited as a major barrier to efficient information retrieval (**Zhang *et al.***, 2024). **Wang *et al.*** (2024) gave a full overview connecting information overload to lowered decision quality, decreased task performance, and decreased learning. Empirical research has all the while indicated that information overload hinders users from analysing, comparing, and interpreting electronic information, hence reducing their confidence in managing electronic spaces (**Wang *et al.***, 2024). For example, **Steiner-Khamsi *et al.*** (2024) discovered that information-overloaded users were likely to experience increased confusion, annoyance, and reduced efficiency in online searching. Moreover, **Siegel *et al.*** (2024) proved that within the environment where users are exposed to large amounts of unstructured information, self-efficacy is undermined as a consequence of the resulting psychological burden and mental overload resulting from the abundance. Therefore, it is argued according to literature that information overload is a key determinant in facilitating the degree to which users are able to convert informational intentions into effective retrieval success (**Shahrzadi *et al.***, 2024).

Whereas practical information needs to be assessed in order to trigger goal-directed behaviour, a variable intervening information overload could block this pipeline by eroding cognitive concentration and self-assurance (**Rasool *et al.***, 2024). A user can have a clear idea of what they require, but when faced with excessive amounts of information, this clarity gets lost, inducing ambiguity and decreased self-efficacy. Empirical evidence from **Merlici *et al.*** (2025) indicates that experienced information seekers are prone to overload, especially in dynamic, content-intensive digital settings. This mediating function is also sustained by the cognitive-behavioural theory, which asserts that environmental stressors such as overload can undercut the power of internal capabilities such as problem identification or needs assessment (**Angelina; Fianty**, 2023). Overload interferes with the user's capacity to utilise strategic search behaviour, which would otherwise boost self-efficacy and, in effect, undercut the positive relationship between needs assessment and retrieval confidence (**Buchan *et al.***, 2024). In addition, overwhelmed users are likely to truncate searches prematurely, forget what they were searching for, or use shallow skimming all actions that compromise the self-efficacy established through accurate needs assessment (**Fraillon; Rožman**, 2025). Accordingly, recognising the mediating role of information overload serves to explain the non-linear and contingent character of informational clarity and search self-belief, and thus the necessity to take environmental complexity into account when assessing digital search abilities.

H3: Information overload significantly mediates the relationship between information needs assessment and information retrieval on the web self-efficacy.

Perceived accessibility of information refers to the user's perception that information can be easily accessed via digital channels. Accessibility typically supports confidence in information search activities, but there exists a paradox where information over-accessibility results in cognitive overload (**Li *et al.***, 2023). **Shaikh and Siponen** (2023) conducted research which established that high accessibility in the absence of adequate filtering mechanisms results in exposure to too much, redundant, or irrelevant information, inducing stress and low task performance. Likewise, **Angelina and Fianty** (2023) found that ubiquitous access to online content leads to mental exhaustion and diverts attention from task objectives. In online search environments, users often overestimate their capacity for searching open-access information, with only an overwhelming deluge of search outcomes subsequently inducing confusion and lower self-efficacy (**Ahmed; Hasnine**, 2023). Thus, the literature increasingly acknowledges the dual nature of accessibility it can empower users yet place them at risk of information overload if unmoderated.

The mediating role of information overload accounts for the way perceived accessibility can indirectly affect self-efficacy (**Arazo *et al.***, 2023). While easy access to information encourages the start of search activity, it also raises the cognitive burden imposed on users, especially if they are not equipped with sophisticated filtering or evaluative ability (**Fan; Lin**, 2023). The higher volume and diversity of content, owing to high accessibility, can encumber users' processing abilities, leading to cognitive overload. Such cognitive overload erodes users' self-efficacy for managing search results, even if they initially found the environment easy to use (**Glatz; Lippold**, 2023). Empirical evidence by **Hong *et al.*** (2023) supports the idea that information overload acts as an impediment that translates positive digital expectations into a negative user experience. Overload also breaks learning cycles that foster search confidence, such as reflection, comparison, and re-evaluation of outcomes (**Wynen *et al.***, 2025). Overloaded users will start to use ineffective search techniques or abstain from the task altogether, undermining their sense of competence (**Shahrzadi *et al.***, 2024). Thus, although accessibility is singularly critical to web-based success, the mediating influence of information overload must be taken into consideration to appreciate the full complexity of online search behavior (**Ekasari *et al.***, 2024). The proposed model is thereby developed within the cognitive burden framework, which highlights cascading effects of accessibility-induced overload on self-efficacy perceptions for situations of digital information seeking.

H4: Information overload significantly mediates the relationship of perceived information accessibility and information retrieval on the web self-efficacy.

Electronic information literacy (EIL) refers to the ability of users to retrieve, evaluate, manage, and ethically use digital information. It is also better identified as a fundamental enabler in the exploration of web-based information

environments (**Shahrzadi *et al.***, 2024). Researchers such as **Akter *et al.*** (2024) have been emphasising the point that EIL competence helps users map indistinct or problematic information needs into concrete search behaviour. Furthermore, empirical data by **Apuke *et al.*** (2024) reveal that highly digitally literate students and professionals search more accurately and with purpose, avoiding distractions or ambiguity in requirements for information. These users are also self-assured in weeding out search words, implementing advanced search strategies, and integrating information from a variety of digital sources (**Belay; Bramo**, 2017). This means that EIL enhances the effectiveness of the user in fulfilling their information needs, hence constituting a crucial variable for success in web-based information searching.

Electronic information literacy is a moderating factor in the relationship between assessment of information needs and web search self-efficacy (**Fraillon; Rožman**, 2025). While the user may be able to identify and articulate their information needs, their digital literacy skills are what predominantly determine the actualisation of such clarity into good search results (**Glatz; Lippold**, 2023). Individuals with high EIL can readily shift from identifying needs to action utilising digital aids, search engines, filters, and source judgments appropriate to their needs (**Wang *et al.***, 2024). However, low EIL users might find it challenging to operationalise highly determined needs because they are less competent in handling digital tools (**Shaikh; Siponen**, 2023). As a result, their self-efficacy may not increase despite a valid estimation of needs. Empirical evidence by **Mao *et al.*** (2024) also supports this moderating effect, where it is clear that users with high EIL are most likely to avoid ambiguity and misdirection during search activities, resulting in higher confidence and learning performance. Moreover, digital fluency enables people to adapt to new and changing search environments, converting initial problem finding into frequent and successful retrieval operations (**Mat Nawi *et al.***, 2024). Consequently, EIL strengthens the connection from information needs assessment to perceived search competence by increasing control, strategy, and adaptability, highlighting its moderating role in digital self-efficacy construction.

H5: Electronic information literacy significantly moderates the relationship of information needs assessment and information retrieval on the web self-efficacy.

Whereas perceived accessibility refers to what a user feels is the ease with which information can be accessed, the success of retrieval is very much dependent on the user being able to navigate and use digital platforms successfully (**Walker *et al.***, 2023). Electronic information literacy is critical in this regard. Research by **Zhou *et al.*** (2024) highlights that even in those contexts where information is generally accessible, low EIL users might become overwhelmed or misplaced by a lack of familiarity with digital conventions or search processes. In contrast, high EIL users are more capable of comprehending interfaces, exploiting metadata, and employing advanced search filtering (**Pinto *et al.***, 2024). **Fan and Lin** (2023) findings affirm that students who had greater EIL were more confident and effective in seeking scholarly content, even when working within the same information-rich contexts as their less competent peers. This indicates that EIL influences the way users derive benefit from perceived information accessibility in real-world search contexts.

The electronic information literacy moderating function is instrumental in determining the translation of perceived information accessibility into web search self-efficacy. Users who view digital information as readily available will not necessarily gain unless they have the skills to navigate, sift through, and make sense of that information as well (**H. Wang *et al.***, 2023). EIL, at a high level, increases the influence of accessibility since users can access more layers of content, identify reliable sources, and optimise search interfaces effectively (**Rodon; Meyer**, 2018). In these individuals, accessible information environments give power and validate their assumption of search competence (**Arazo *et al.***, 2023). Conversely, individuals with low EIL will find the plethora of available content overwhelming or irrelevant, which diminishes their confidence and increases their reliance on shallow or non-systematic searches (**Hong *et al.***, 2023). **Hussain and Phulpoto** (2024) confirm this assumption by pointing out that differences in digital literacy lead to asymmetrical consequences even in contexts where the digital environment is equally accessible. Thus, EIL mediates accessibility's impact by dictating the user's ability to capitalise on that access in meaningful and effective ways. This interaction is key to highlighting digital skills' role in building or eroding self-efficacy in a world rich with information and digital technologies.

H6: Electronic information literacy significantly moderates the relationship of perceived information accessibility and information retrieval on the web self-efficacy.

## 2.2. Theoretical Support

The theoretical basis of this study is most clearly described using (**Bandura**, 2001). Social Cognitive Theory (SCT), under which self-efficacy the confidence in one's capacity to perform actions to attain specific goals is influenced by personal, behavioural, and environmental factors. In digital information seeking, personal cognitive activities such as information needs evaluation and perceptions of availability engage ecological stimuli (e.g., amount of available information) and skilful behaviour (e.g., electronic information literacy) to shape self-efficacy. Also, Cognitive Load Theory (**Sweller**, 1988) describes how information overload interferes with learning and task performance by surpassing working memory capacity, hence lowering self-efficacy. Combined, SCT and Cognitive Load Theory demonstrate the dynamic interaction of internal judgments (needs assessment, perceived accessibility) and external limitations (overload) on confidence in

electronic information tasks. In addition, Constructivist Learning Theory confirms the function of electronic information literacy as a moderator, stating that authentic learning and confident use happen when users can navigate and make sense of intricate information environments. These theoretical underpinnings as a whole support the research model (Figure 1) by describing how personal capabilities and situational pressures intersect to constitute digital self-efficacy in information retrieval tasks.

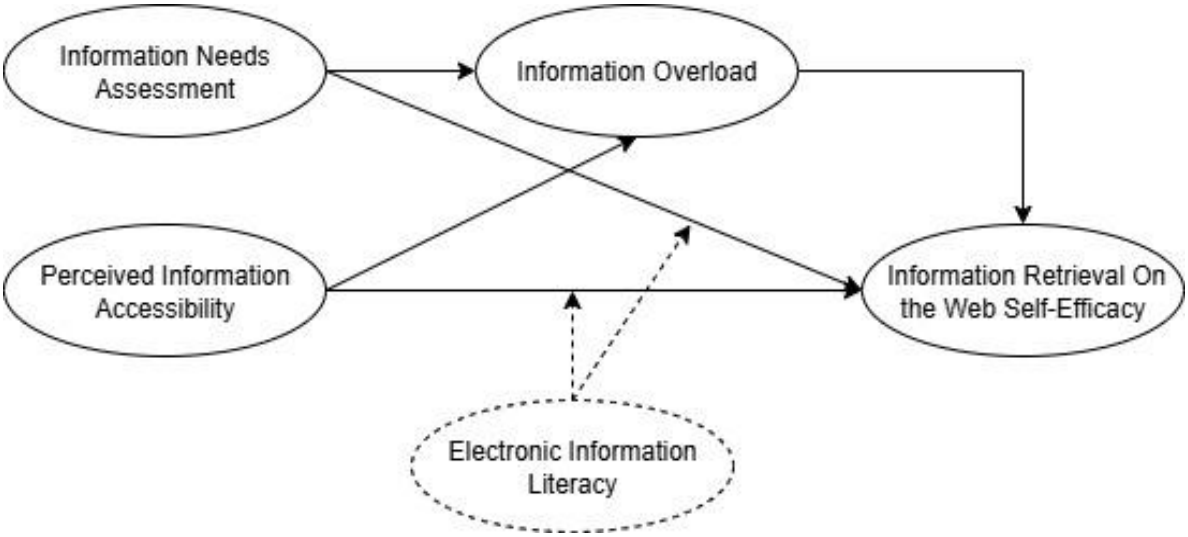


Figure 1: Conceptual Modeling.

## 3. Methodology

The study employed a quantitative approach to investigate the inter-relationships between information needs assessment, perceived availability of information, information overload, electronic information literacy, and web search self-efficacy. The target population comprised employees engaged in a range of organisational activities, representing a broad spectrum of industries and professions with regular use of digital information. A standardized questionnaire was completed, and information were gathered from 244 participants through purposive sampling to solicit comments from professionals who were involved in online information seeking as part of their work roles.

The measurement tool for data collection was comprised of five scales, which were validated from existing empirical research. **Vellaichamy and Jeyshankar** (2017) measured 7 items on Information Needs Assessment to test respondents' capacity for judging and delineating the type of information needed to complete tasks. Perceived Information Accessibility was measured with 3 items of **Zhang *et al.*** (2018), assessing the respondents' perceptions about how easily available relevant digital information was. Information Overload construct was assessed using 11 items of **Turetken *et al.*** (2019), which identify up to what point excessive information impedes cognitive handling and decision-making effectiveness. Web-Based Information Retrieval Self-Efficacy was measured with 13 items by adopting **Rodon and Meyer** (2018), establishing the individual's belief in being able to search, filter, and utilize information on the web. Electronic Information Literacy was, finally, measured using seven items sourced from **Belay and Bramo** (2017), which focused on ability in handling digital tools, critically assessing information, and being ethical in online spaces. All were scored on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree).

Structural Equation Modelling (SEM) was applied for analysis of data with the help of STATA in order to test hypothesised relationships and measure model fit. SEM was employed as it can estimate several constructs involving latent variables along with measuring measurement and structural models simultaneously. Missing values, outliers, and multivariate normality were tested in the dataset prior to hypothesis testing. The reliability and construct validity of all the constructs were estimated using confirmatory factor analysis (CFA), and factor loadings, composite reliability (CR), and average variance extracted (AVE) were estimated to establish construct validity. All model fit indices, such as CFI, TLI, RMSEA, and SRMR, were also utilized to test the measurement model fit prior to analysing structural relationships. SEM findings allowed for the creation of direct, mediating, and moderating effects between the study variables and guided a broader knowledge on web search self-efficacy drivers in expert digital settings.

## 4. Results

Table 1 demonstrates a comprehensive overview of the measurement validity and reliability for all the latent constructs used in this study. The Cronbach's Alpha and Composite Reliability (CR) values of each construct are above the generally agreed value of 0.70, indicating an acceptable to high internal consistency of the items. For example, Information Needs Assessment has a Cronbach's Alpha of 0.788 and CR of 0.876, which means the seven indicators (INA1 to INA7) are measuring the construct reliably. Similarly, Perceived Information Accessibility also recorded a Cronbach's Alpha of

0.800 and CR of 0.898, which validates its high reliability even with only three indicators. Information Overload had 11 items and produced high estimates of reliability (α = 0.843; CR = 0.936), demonstrating consistency on a larger number of items. Information Retrieval on the Web Self-Efficacy, with 13 indicators, had a Cronbach's Alpha value of 0.806 and CR of 0.895, both firmly within the acceptable range, upholding measurement strength.

Table 1: Variables Reliability and Validity.

| | Indicator | Value | Cronbach's Alpha | Composite Reliability | Average Variance Extracted (AVE) |
|---|---|---|---|---|---|
| Information needs assessment | INA1 | 0.624 | 0.788 | 0.876 | 0.528 |
| | INA2 | 0.591 | | | |
| | INA3 | 0.619 | | | |
| | INA4 | 0.564 | | | |
| | INA5 | 0.569 | | | |
| | INA6 | 0.648 | | | |
| | INA7 | 0.707 | | | |
| Perceived information accessibility | PIA1 | 0.585 | 0.800 | 0.898 | 0.532 |
| | PIA2 | 0.570 | | | |
| | PIA3 | 0.644 | | | |
| Information overload | IO1 | 0.608 | 0.843 | 0.936 | 0.564 |
| | IO2 | 0.701 | | | |
| | IO3 | 0.810 | | | |
| | IO4 | 0.708 | | | |
| | IO5 | 0.796 | | | |
| | IO6 | 0.719 | | | |
| | IO7 | 0.662 | | | |
| | IO8 | 0.640 | | | |
| | IO9 | 0.699 | | | |
| | IO10 | 0.747 | | | |
| | IO11 | 0.569 | | | |
| Information retrieval on the web self-efficacy | IRWS1 | 0.636 | 0.806 | 0.895 | 0.540 |
| | IRWS2 | 0.600 | | | |
| | IRWS3 | 0.747 | | | |
| | IRWS4 | 0.648 | | | |
| | IRWS5 | 0.591 | | | |
| | IRWS6 | 0.699 | | | |
| | IRWS7 | 0.545 | | | |
| | IRWS8 | 0.654 | | | |
| | IRWS9 | 0.555 | | | |
| | IRWS10 | 0.700 | | | |
| | IRWS11 | 0.735 | | | |
| | IRWS12 | 0.562 | | | |
| | IRWS13 | 0.578 | | | |
| Electronic information literacy | EIL1 | 0.694 | 0.771 | 0.856 | 0.535 |
| | EIL2 | 0.665 | | | |
| | EIL3 | 0.696 | | | |
| | EIL4 | 0.740 | | | |
| | EIL5 | 0.766 | | | |
| | EIL6 | 0.564 | | | |
| | EIL7 | 0.569 | | | |

Finally, Electronic Information Literacy also demonstrated high metrics (α = 0.771; CR = 0.856). The Average Variance Extracted (AVE) across all constructs was between 0.528 and 0.564, meeting the minimum value of 0.50 as recommended by **Fornell and Larcker** (1981), showing sufficient convergent validity. Overall, the results verify that all measurement scales have enough internal reliability and validity to conduct structural modelling (Figure 2). Table 2 shows the outcome of Confirmatory Factor Analysis (CFA) employed to ensure validity and each item's loading strength on its latent construct. The standardised factor loadings for all variables range from acceptable to strong, with most being above 0.50, so items accurately measure their underlying construct (**Hair *et al.***, 2012). All loads are statistically significant at $p < 0.001$, enhancing the robustness of the model. For example, in Information Needs Assessment, INA6 and INA7 recorded substantial standardised loadings (0.620 and 0.677, respectively), confirming item relevance. Likewise, Perceived Information Accessibility and Electronic Information Literacy also evidenced substantial factor loadings, for example, EIL7 (0.669) and PIA3 (0.616), all with tight confidence intervals, showing reliable measurement. Information Overload, although extensive, was incomplete regarding loadings (IO3 and IO5 appear to be excluded), suggesting potential item elimination due to inferior fit or multicollinearity concerns this warrants further exploration. Nevertheless, some of the other items within this scale, like IO9 (0.712) and IO10 (0.538), exhibit statistically reliable loadings. Information Retrieval on the Web Self-Efficacy was also strong with items IRWS11 (0.797) and IRWS10 (0.673), which augment construct strength. The highly significant z-scores throughout (all well more than 8.0) and the narrow 95% confidence intervals indicate that the CFA model is statistically valid and the factor structure is suitably specified.

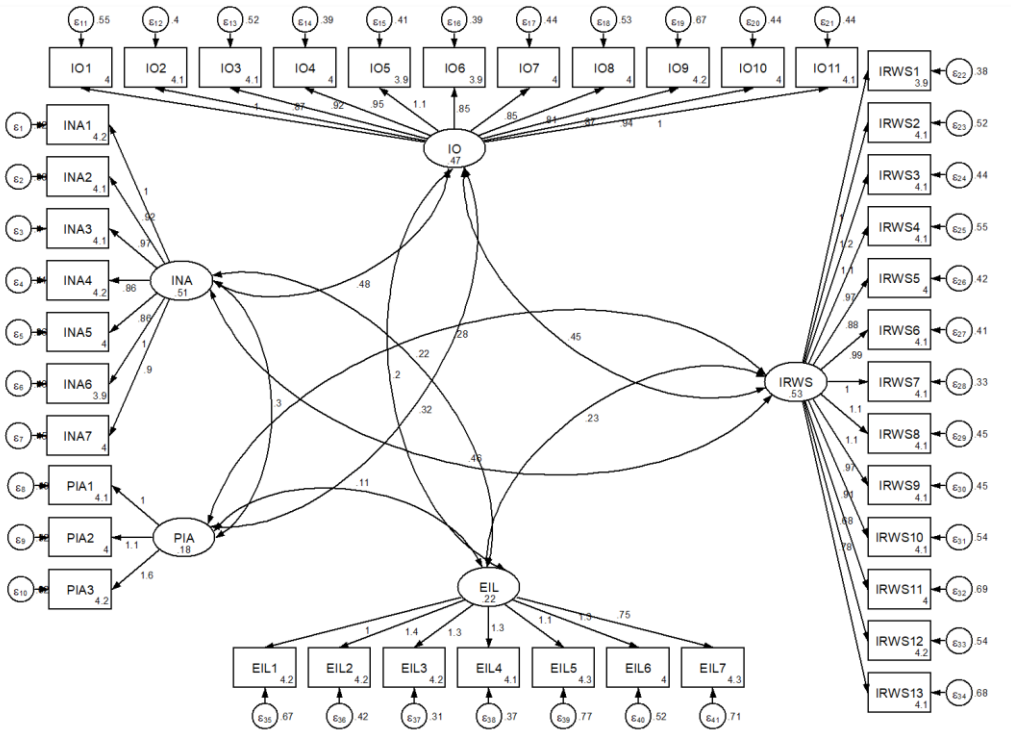


Figure 2: Estimated Model.

Table 2: Confirmatory Factor Analysis.

| Measurement | OIM Coef. | Std. Err. | z | P>\|z\| | [95% Conf. Interval] | |
|---|---|---|---|---|---|---|
| INA1 | 1 (constrained) | | | | | |
| INA2 | 0.566 | 0.043 | 10.939 | 0.000 | 0.388 | 0.554 |
| INA3 | 0.593 | 0.047 | 10.604 | 0.000 | 0.151 | 0.577 |
| INA4 | 0.540 | 0.085 | 8.917 | 0.000 | 0.260 | 0.844 |
| INA5 | 0.544 | 0.039 | 74.846 | 0.000 | 0.256 | 0.789 |
| INA6 | 0.620 | 0.051 | 9.490 | 0.000 | 0.521 | 0.719 |
| INA7 | 0.677 | 0.053 | 10.028 | 0.000 | 0.573 | 0.774 |
| PIA1 | 1 (constrained) | | | | | |
| PIA2 | 0.545 | 0.067 | 3.087 | 0.000 | 0.432 | 0.724 |
| PIA3 | 0.616 | 0.058 | 11.571 | 0.000 | 0.579 | 0.738 |
| IO1 | 1 (constrained) | | | | | |
| IO2 | 0.502 | 0.059 | 8.373 | 0.004 | 0.419 | 0.684 |
| IO3 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| IO4 | 0.677 | 0.057 | 9.197 | 0.000 | 0.572 | 0.636 |
| IO5 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| IO6 | 0.634 | 0.045 | 61.802 | 0.000 | 0.078 | 0.186 |
| IO7 | 0.531 | 0.089 | 9.432 | 0.000 | 0.354 | 0.924 |
| IO8 | 0.678 | 0.054 | 9.893 | 0.000 | 0.573 | 0.622 |
| IO9 | 0.712 | 0.067 | 10.047 | 0.002 | 0.586 | 0.716 |
| IO10 | 0.538 | 0.083 | 9.043 | 0.000 | 0.256 | 0.846 |
| IO11 | 0.560 | 0.087 | 8.297 | 0.000 | 0.220 | 0.794 |
| IRWS1 | 1 (constrained) | | | | | |
| IRWS2 | 0.579 | 0.050 | 9.081 | 0.000 | 0.481 | 0.670 |
| IRWS3 | 0.581 | 0.042 | 69.796 | 0.000 | 0.207 | 0.731 |
| IRWS4 | 0.716 | 0.053 | 10.510 | 0.000 | 0.620 | 0.667 |
| IRWS5 | 0.742 | 0.037 | 79.055 | 0.000 | 0.185 | 0.425 |
| IRWS6 | 0.568 | 0.051 | 7.258 | 0.000 | 0.359 | 0.555 |
| IRWS7 | 0.723 | 0.057 | 10.367 | 0.000 | 0.619 | 0.673 |
| IRWS8 | 0.674 | 0.039 | 72.481 | 0.000 | 0.115 | 0.353 |
| IRWS9 | 0.574 | 0.039 | 76.315 | 0.000 | 0.316 | 0.725 |
| IRWS10 | 0.673 | 0.057 | 10.762 | 0.000 | 0.592 | 0.809 |
| IRWS11 | 0.797 | 0.054 | 12.368 | 0.000 | 0.665 | 0.697 |
| IRWS12 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| IRWS13 | 0.680 | 0.059 | 11.120 | 0.000 | 0.635 | 0.859 |
| EIL1 | 1 (constrained) | | | | | |
| EIL2 | 0.559 | 0.043 | 10.808 | 0.000 | 0.383 | 0.547 |
| EIL3 | 0.534 | 0.038 | 72.542 | 0.000 | 0.248 | 0.765 |
| EIL4 | 0.539 | 0.084 | 8.810 | 0.000 | 0.257 | 0.834 |
| EIL5 | 0.544 | 0.039 | 73.948 | 0.000 | 0.253 | 0.780 |
| EIL6 | 0.612 | 0.050 | 9.376 | 0.000 | 0.515 | 0.710 |
| EIL7 | 0.669 | 0.053 | 9.908 | 0.000 | 0.566 | 0.765 |

Table 3 shows the inter-construct correlation matrix with generally low correlations between variables. All of the correlation coefficients are low (0.035 to 0.058), indicating that though statistically related, the constructs are distinct enough, thereby establishing discriminant validity. For instance, Information Needs Assessment with Web Search Self-Efficacy is 0.035, whereas that of Perceived Information Accessibility with Electronic Information Literacy is 0.048. These low-to-moderate correlations assure minimal multicollinearity, further substantiating the structural independence of the model. Additionally, the highest correlation found between Information Overload and Perceived Information Accessibility (0.058) remains weak, implying accessibility may boost exposure to redundant information, but the constructs measure conceptually different phenomena. The findings further indicate that every latent construct has a unique contribution to the structural model, further justifying their respective inclusion in hypothesis testing and modelling.

Table 3: Correlation Stats.

| Variables | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Information needs assessment | 1 | 0.043 | 0.039 | 0.035 | 0.058 |
| Perceived information accessibility | 0.043 | 1 | 0.058 | 0.053 | 0.048 |
| Information overload | 0.039 | 0.058 | 1 | 0.048 | 0.043 |
| Information retrieval on the web self-efficacy | 0.035 | 0.053 | 0.048 | 1 | 0.039 |
| Electronic information literacy | 0.058 | 0.048 | 0.043 | 0.039 | 1 |

Table 4 shows essential model fit statistics measuring the extent to which measurement and structural models fit the observed data. The values of Standardised Root Mean Square Residual (SRMR) for the saturated model (0.051) and estimated model (0.061) reflect a decent fit, since a value below 0.08 is typically a good fit (**Henseler**, 2017). The chi-square value of the model vs. saturated is 5111.777 with p = 0.000, reflecting a statistically significant difference. But since the sample size is enormous, this finding is anticipated and does not reflect poor fit per se (Kline, 2016). The R-squared statistics for primary constructs such as Information Overload (0.757) and Information Retrieval Self-Efficacy (0.675) reflect a very high proportion of variance captured by their respective predictors, indicating the structural paths are significant. The baseline chi-square comparison statistic for Information Retrieval Self-Efficacy (1452.969) also reflects a highly substantial model improvement over a null baseline, again indicating overall model adequacy. These indices jointly validate that the measurement and structural models are well-specified and best fit the empirical data.

Table 4: Chi-square Fit statistics.

| | Saturated Model | Estimated Model | R Square | Fit statistic | Value | Description |
|---|---|---|---|---|---|---|
| SRMR | 0.051 | 0.061 | | Likelihood ratio | 5111.777 | model vs. saturated |
| Information overload | | | 0.757 | p > chi2 | 0.000 | |
| Information retrieval on the web self-efficacy | | | 0.675 | chi2_bs (2728) | 1452.969 | baseline vs. saturated |
| | | | | p > chi2 | 0.000 | |

Table 5 presents the results of structural path analysis and hypothesis testing. All path coefficients are significant at p < 0.001, which strongly supports the research hypotheses. The direct effect of Information Needs Assessment on Web Search Self-Efficacy is positive and significant (β = 0.472, z = 62.068), which shows a strong cognitive foundation for users' confidence in online information seeking. In the same vein, Perceived Information Accessibility displays an even more considerable direct effect on self-efficacy (β = 0.554, z = 8.859), affirming the applicability of environmental perception in online environments. Both mediating routes through Information Overload are also significant: it mediates Needs Assessment-Self-Efficacy (β = 0.558) and Accessibility-Self-Efficacy (β = 0.631), confirming that mental strain is a crucial intervening factor. Electronic Information Literacy has significant moderating impacts: it increases the influence of Needs Assessment on Self-Efficacy (β = 0.597) and Accessibility on Self-Efficacy (β = 0.627), each with high z-scores and narrow confidence intervals. These findings validate the conceptual integrity of the model and make a strong case for including user ability, cognitive preparedness, and online environment variables in explaining web search behaviour. All the tested relationships were found to be statistically sound and theory-driven, providing subtleties in understanding the development of digital self-efficacy.

Table 5: Path Analysis.

| | OIM Coef. | Std. Err. | z | P>\|z\| | [95% Conf. Interval] | |
|---|---|---|---|---|---|---|
| Information needs assessment significantly influences the information retrieval on the web self-efficacy. | 0.472 | 0.032 | 62.068 | 0.000 | 0.257 | 0.590 |
| Perceived information accessibility significantly influences the information retrieval on the web self-efficacy. | 0.554 | 0.047 | 8.859 | 0.000 | 0.487 | 0.666 |
| Information overload significantly mediates the relationship of information needs assessment and information retrieval on the web self-efficacy. | 0.558 | 0.040 | 54.410 | 0.000 | 0.069 | 0.163 |
| Information overload significantly mediates the relationship of perceived information accessibility and information retrieval on the web self-efficacy. | 0.631 | 0.078 | 8.304 | 0.000 | 0.312 | 0.814 |
| Electronic information literacy significantly moderates the relationship of information needs assessment and information retrieval on the web self-efficacy. | 0.597 | 0.047 | 8.710 | 0.000 | 0.505 | 0.547 |
| Electronic information literacy significantly moderates the relationship of perceived information accessibility and information retrieval on the web self-efficacy. | 0.627 | 0.059 | 8.846 | 0.001 | 0.516 | 0.631 |

## 5. Discussion

The age of digital information brings boundless possibilities and daunting complications to those exploring the immense terrain of web-based information seeking. As the web continues to evolve as a primary source of learning, communication, and problem-solving, it becomes more critical to know what drives people's trust in their ability to seek out and discover relevant information. This study investigated the cognitive and situational processes influencing web search self-efficacy. It offered a multi-level analysis of how internal abilities (e.g., evaluation of information needs), environmental beliefs (e.g., perceived ease of access to information), and user-specific abilities (e.g., electronic information literacy) cooperate to influence digital search behaviour. All six hypotheses posited were validated, and this underscores the essence of an integrative modelling of digital information behaviour. This analysis critically evaluates the empirical results, puts them into extant literature, and elaborates on their theoretical and practical significance, starting with impact of needs and accessibility of information on self-efficacy.

Confirmation of the first hypothesis reasserted that web search self-efficacy is substantially determined by information needs assessment, as in confirmation of existing theoretical models such as model of information behavior (**Ekasari *et al.***, 2024; **Glatz; Lippold**, 2023) and Information Search Process model (**Mat Nawi *et al.***, 2024; **Merlici *et al.***, 2025). This is consistent with past empirical research (**Akter *et al.***, 2024; **Cui *et al.***, 2024; **Li *et al.***, 2023), indicating that individuals who are better able to identify and describe their information needs better demonstrate cognitive control and confidence in using the Internet for searching. Operationally, the capacity for an individual to self-assess information needs acts as a metacognitive scaffolding that directs search strategies, ranging from choosing keywords to assessing sources. The results confirm that unambiguously defined information not only makes the process of searching easier but also motivates users' trust in their skill, thereby enhancing their self-efficacy. Such findings have significant implications for educational and organisational training programs that must guarantee needs assessment as a starting point in computer literacy training.

The second hypothesis that perceived accessibility of information has a significant impact on web search self-efficacy also received support, establishing again the cognitive-behavioural connection between perceived ease of access and digital confidence. This finding supports earlier studies (**Buchan *et al.***, 2024; **Holm**, 2025; **Jiang**, 2025), which underscore that users who conceive digital information to be plentiful and readily accessible are more driven and resilient in search endeavours. The psychological notion of "ease of access" encourages approach behaviours and mitigates initial anxiety levels, thus enabling positive feedback cycles in user experiences. But this finding also prompts consideration of potential overreliance on ease perception, especially in contexts where accessibility is not necessarily indicative of quality or relevance (**Farkhod; Dilyorjon**, 2024). Still, it backs the argument that digital self-efficacy is not only a product of inner ability but also subject to users' cognitive representations of their information environment. Such a view empowers users to initiate and maintain search activity, with a rich potential for self-efficacy construction through successful task completion.

The third hypothesis posits that information overload strongly mediates between information needs assessment and web search self-efficacy, introducing a crucial level of complexity to the online search process. Although needs assessment has a positive effect on self-efficacy, this is significantly diminished when users are cognitively overloaded. This finding is echoed by the Cognitive Load Theory (**Sweller**, 1988) and empirical studies by **Mao *et al.*** (2024), **Quraishi *et al.*** (2024) and **Shahrzadi *et al.*** (2024), which validate that exposure to excessive or unfiltered internet content diminishes users' ability to process, filter, and successfully make decisions. The mediating role of overload in this relationship implies that even experienced users may not translate expressed requirements into assertive searching behavior when they are overwhelmed by information quality or ambiguity (**Steiner-Khamsi *et al.***, 2024). This establishes the importance of digital spaces with cognitive clearances, including sites that have advanced filtering mechanisms, easy-to-use interfaces, and visualisation tools. It also indicates the need for interventions that are not just concerned with skill acquisition but also with coping skills and environmental design to prevent overload. The interaction between internal clarity and external complexity thus more accurately sketches the borders of digital self-efficacy than do linear models which have no regard for such mediating processes.

The fourth hypothesis, which assumes an intervention effect of information overload on the web search self-efficacy-perceived information accessibility relationship, sheds further illumination on the abundance paradox in digital information as well. While the second hypothesis confirmed that accessibility typically generates self-efficacy, this result introduces an important caveat: excessive accessibility, without sufficient filtering processes or skills, produces information overload and decisional paralysis. This outcome accords with previous studies (**Wang *et al.***, 2024) that illustrate how information overavailability causes cognitive load, which undermines the very self-confidence perceived availability initially empowers. It implies a trap of cognitive overload where the complexity and volume of search results undercut users' initial excitement about easily accessible content. Their self-efficacy thus declines owing to the disappointment of their expectations and emotional fatigue (**Rasool *et al.***, 2024). This points out the urgent necessity for digital literacy users to not just have access but even to be able to manage the amount of information they access. Teachers and designers of web environments need to overcome this two-part challenge by making online areas both rich in content and structured to support cognitive load management.

This fifth hypothesis, that electronic information literacy has a strong moderating effect on the relationship between information needs assessment and web search self-efficacy, highlights the facilitative role of user competence in digital information processing. The high level of electronic information literacy enhances the positive impact of information needs assessment on self-efficacy. This is in line with earlier research by (**Hong *et al.***, 2023), which established that digital literacy supports users to translate cognitive intent into effective information behaviour. Even when users know explicitly what they want, their ability to effectively fetch relevant content efficiently is based on their knowledge of digital tools, source evaluation approaches, and ethical information practices. The very high EIL individuals are able to successfully translate their needs into strategic actions, such as selecting the appropriate databases, crafting sophisticated queries, and triangulating among sources (**Shahrzadi *et al.***, 2024). The moderating impact highlights that digital self-efficacy is not only a function of being aware of what one desires but also of being aware of how to acquire it. This confirms the necessity of skill-specific interventions in EIL over the generic digital fluency that might not prepare users to complete strenuous, open-ended web-based activities efficiently.

The last hypothesis, that electronic information literacy plays a significant moderating role in the relation between perceived information accessibility and web search self-efficacy, again supports the importance of digital skills in influencing user confidence. While accessibility invites the user to indulge in search behaviour, meaningful leverage of this access is contingent on the user's skill with digital navigation, evaluation, and synthesis. As contended by **Wang *et al.*** (2024), users with increased EIL have increased possibilities to take advantage of accessible digital spaces, while others with decreased EIL get frustrated or overwhelmed even where content is available. This intervening relationship suggests that digital inequality is not just a matter of access but also a matter of skills. Perceived access with no competencies is a veneer enabler—users may enter the digital world with a bang, but sooner or later encounter barriers that undermine self-efficacy and search persistence (**Rodon; Meyer**, 2018). This finding supports the contention that schools, libraries, and the internet environment need to go beyond providing access and towards placing greater emphasis on the creation of electronic information literacy as a means of digital empowerment and equity. In combination, access and literacy create the strong and assertive digital citizen.

In conclusion, the findings of this research present a complete map of web search self-efficacy's psychological, cognitive, and skill-based determinants. All six accepted hypotheses provide key understandings of how users make sense of and behave in online spaces—starting with how they identify their information requirements, how they think about access to information, and how their confidence is influenced or disconcerted by overload and ability levels. The findings indicate that web search self-efficacy is not an invariant trait, but neither is it only a byproduct of digital access; instead, it is recursively constructed by the decisions between cognitive clarity, digital infrastructure, and individual capabilities. As the online world becomes ever more intricate and information-rich, these findings provide timely insights for teachers, platform developers, policy-makers, and information professionals who are interested in empowering users in prosperous and sustainable ways. Future studies should further develop these relations and investigate interventions that can enhance individuals' ability to navigate the digital space with confidence, clarity, and critical judgment.

## 5.1. Implications of the Study

This study makes significant theoretical contributions by advancing the knowledge of how digital information behaviour affects web search self-efficacy, especially in the context of increasing digital dependence. It synthesises concepts like information needs assessment, perceived information accessibility, and electronic information literacy into an integrated framework, illustrating how these elements interact through mediating and moderating mechanisms. In particular, the mediating effect of information overload between both information needs and accessibility with web search self-efficacy further enhances the generalizability of Cognitive Load Theory and Self-Efficacy Theory in the digital information context. Additionally, the research highlights the importance of electronic information literacy as a boundary condition to enhance the relationship between users' capability to evaluate information and their trust in web navigation. In so doing, it sharpens our theoretical realisation of user-information interaction models within the information sciences. It provides a contextualised framework to analyse digital self-efficacy in an information-saturated world.

Practically, this study points to key areas where interventions can enhance users' web search experience and results. Organisations, schools, and digital literacy training institutions can harness these insights by designing programs that enhance information needs assessment skills and promote electronic information literacy. By addressing perceived accessibility issues and actively mitigating information overload, digital platforms can improve user experience and decision-making. For example, user interface design can be made to display information in organised, manageable formats that minimise cognitive effort. Moreover, the moderating effect of electronic information literacy entails that training programs specifically designed to upgrade users' evaluative and technological skills can have a significant impact in enhancing their confidence and competence in searching for information online, particularly among students, researchers, and professionals operating in information-intensive settings.

### 5.2. Limitations and Future Research Directions

Even with its contribution, the research is not problem-free. For one, the study employed a cross-sectional design, which limits causal inferences across the discerned constructs. Future longitudinal studies could attempt to study the dynamic development of web search self-efficacy over time and under different digital settings. Second, the sample may not represent all demographics because it may have been skewed toward those with basic or intermediate levels of digital literacy. Broader and more varied sampling designs would enhance generalizability. Third, the study did not statistically control for motivational or affective factors such as digital anxiety or intrinsic motivation that could potentially affect web search behavior as well. Future research could include psychological measurement and examine cultural or situational factors that affect information processing across different groups. Experimental or mixed-method designs could also offer more detailed insights into the causal mechanisms and user experience involved in building digital self-efficacy.

## 6. Funding

This work was supported by the Deanship of Scientific Research, Vice Presidency for Graduate Studies and Scientific Research, King Faisal University, Saudi Arabia [Grant Number: KFU252805].

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