

Digital ignorance engineering and declining social awareness among youth: Evidence from the Hail Region



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ARTICLE INFO

Article history:

Received 15 March 2026

Received in revised form

3 August 2026

Accepted 10 August 2026

Keywords:

Digital ignorance

Social awareness

Critical literacy

Digital vulnerability

Youth engagement

ABSTRACT

The aim of this study was to explore the relationship between digital ignorance engineering and decreased social awareness among youth in the Hail Region. It also examined the levels of both constructs, the key barriers to effective intervention, and the proposed mechanisms for addressing the problem. A quantitative descriptive correlational design was used, and data were collected through an electronic questionnaire administered to 241 digitally active youth during the 2025 school year. Four dimensions of digital ignorance engineering and four dimensions of decreased social awareness, perceived challenges, and proposed interventions were assessed. The results showed that digital ignorance engineering was at a moderate level, social awareness was at a moderate level, barriers to effective interventions were high, and the proposed solutions were well supported. A statistically significant positive correlation was found between digital ignorance engineering and decreased social awareness. Regression analysis indicated that 32.2% of the variance in students' social awareness was explained by digital ignorance engineering, with the cognitive and media dimensions being the strongest factors explaining social awareness. The findings indicate that digital ignorance engineering is a measurable problem affecting youth digital literacy, critical judgment, and socially responsible awareness in the Hail Region.

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1. Introduction

Digital communication systems have become a part of young people's daily lives, and informational sensibility and responsible interactions have been influenced by digital communication technologies. In such settings, considering the audience's visual, speedy, stimulating, and emotional appeal tends to take precedence over considering reflection, verification, and civic responsibility. Consequently, there can be a displacement of content, such as substantive cultural, educational, and social content, by trivial, emotionally charged, algorithmically amplified content. It's significant because we should avoid assuming that young people merely passively consume digital information. Rather, their perceptions and priorities are formed by "rhythms, incentives, and symbolic hierarchies of platform life.

There is recently emerging evidence that intensive social media usage can have a negative impact on youth sleep, emotional well-being, and mental health, which can ultimately impact sustained attention and meaningful engagement with reality (Yu et al., 2024). Weakened social awareness, in this context, is not only a product of using the Internet but also the effect of the structuring of the Internet world of today.

Digital ignorance engineering is a process of shaping attention in digital spaces by intentionally making emotionally or trivially charged, low-value, and/or misleading content more visible, more repetitive, and more socially rewarded—so that it becomes more visible, more repeated, and more socially rewarded than reflective, credible, and socially meaningful content. No single party is responsible for the process of "engineering," as it is created by the interplay between the design of the platform, the algorithmic recommendation systems it employs, the practices of content creators and influencers, and the continual engagement of users with viral trends. The platforms and algorithms help drive this process by ranking, recommending, and boosting content for visibility, speed, emotional pull,

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<https://doi.org/10.21833/ijaas.2026.08.006>

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and interaction; and the content creators and influencers can amplify it by creating (and curating) simplified, sensational, or imitative content that gets immediate attention.

These processes can lead to symbolic consumption, a decrease in critical filtering, a loss of attention to the social, and a distraction from issues of public interest. Besides, it is further perpetuated through platform cultures, which tend to popularize, stimulate, and circulate content quickly, usually to the benefit of adolescents and young adults (Kobilke and Markiewitz, 2024). In addition, qualitative evidence indicates that frequent use of TikTok could lead to a waste of time, a decline in emotional state, low productivity at work, and a decline in communication in offline settings, which are all connected to the decrease in socially embedded awareness (Langlais et al., 2025). For this reason, a lack of social perception can be considered a "civic and cultural effect" of digitally organized triviality.

This concern is more significant when taken into account in the light of the Saudi environment and, more importantly, the educational and social environment of Hail. Research at the University of Hail has revealed that students' attitudes to technological participation are not only technical but also cognitive and social because readiness, self-regulation, and adaptive capacity influence their technological participation (Kolhar et al., 2021).

The University of Hail is demonstrating in other studies that education, training, and e-learning can have a positive impact on social empowerment in cases of digital participation in active developmental objectives as opposed to passive consumption (Alhaj Hussein, 2024). The importance of educational programs, expectations, and social capital to strengthen volunteering and sustainable civic engagement in the Kingdom of Saudi Arabia has also been outlined in similar literature, leading to enhanced institutional aspects of social awareness (Zafar et al., 2025). The regional and local results suggest that digital spaces may lead to feelings of isolation, disconnection, and blind following among youth or leave them vulnerable. That is why the Hail context is a convenient one to determine whether digital ignorance can be experienced by the youth or can be reproduced by the digital content in which youth live.

More screen time doesn't necessarily have just time-use implications, as additional evidence from Hail suggests. Among Hail University female students, the study revealed a significant relationship between excessive usage of social media and insomnia, which indicates that excessive social media usage has an indirect impact on reflective and social capabilities and affects the well-being, mood, and organization of daily life. Further research conducted by the University of Hail has revealed that Internet addiction negatively impacts mindfulness and causes distress among students, which may lead to attentional instability and the reduction of internal self-control, thereby affecting students' social awareness (Alnasser and Kumar, 2025).

These psychological pressures, together with minor content printed as ads and placed in algorithms, can bring about a situation that gives rise not only to distraction but also to an increased orientation toward values and priorities and responsibility for the community. However, even with the applicability of these trends, the direct linkage between digital ignorance engineering and weak social awareness has not been well researched in both Arab and international literature. Most of the literature on the use of social media, online education, or mental health has focused on the utilization of these topics in particular and not on a digitally structured ignorance as such, nor on its societal consequences. This inconclusiveness provides the conceptual and empirical foundation of the ongoing investigation.

In this context, the current study investigates digital ignorance engineering and its link with the disoriented social consciousness among digital youth. The study is founded on the premise that exposure to seemingly irrelevant, counterproductive, and interesting messages over time will cause young people to turn a blind eye to serious social issues. It, therefore, evaluates the extent of digitally unschooled engineering, the extent of reduced social awareness, and the relationship between both constructs within the youth in a digitally impregnated environment. The study also brings to the fore the concept theme, which is not explored as much in Arabic literature in academic circles, and places the study within a Saudi and "Hail"-related context. It is there to conceptualize the notion of produced ignorance in a digital age, giving empirical data to youth and media studies and contextualizing the process of social transformation in the Arab world. This relationship might be explored in the fields of education, institutions, and culture to create educational and institutional interventions that foster criticality and social responsibility in digital environments.

1.1. Statement of the problem

Digital media is the order of information, the interpretation of judgments, and the understanding of social reality as youth are given information. But there is Internet attention that is served by fast, emotional, and low-quality content, which impairs reflection and inhibits concentration on several issues. Digital ignorance has been scientized, in the sense that the strategy of focus was diverted to superficial information rather than critical scrutiny. When social awareness is lost, it can be seen in an inability to be responsible to society, a lack of consciousness in real life, and a loss of value. When taken together, these trends describe an emerging social problem that directly affects young people and their understanding and interaction with information on issues that concern society.

This has been supplemented on digital platforms with the 'culture of influencers' and 'algorithm amplifiers' and the online trends that have no

foundation. Youngsters in the Hail, as well as other places in the world, communicate through global platforms, but their experiences are developed under cultural and institutional preconditions. Critical ignoring is also termed a digital competence since misleading content is set in such a way that scarce attention can be hijacked and impulsive interaction is encouraged (Kozyreva et al., 2023). Research has focused mainly on addiction, anxiety, misinformation, and online behavior. Less work has been carried out on the actual digital production and social reproduction of ignorance as a form of knowledge. There have been insufficient studies on what ignorance is as a form of knowledge and how it is produced and reproduced digitally. This has constrained the impact of interventions based on education and policy.

The present study considers the lack of understanding about the engineering of digital ignorance and its effect on reduced social awareness of youth. The significance of this issue is selected because frequent exposure to unimportant and conflicting content can show a negative impact on social responsibility and people's involvement in society. The fact that adolescents receive false information and respond to it by dealing with it in a half-checked way (Selnes, 2024) supports the sense of urgency it has. Despite this urban center, this link has not received much attention in Arabic literature nor in the literature of Hail. It is still a researchable issue since media, social, and behavioral indicators of the issue have been measured. At this point, the research question would be: What is the truth about digital ignorance and engineering, and how is social awareness of youths in the digital era undermined?

1.2. Objectives

- To explore the influence of engineering digital ignorance on contaminated nuances and social awareness of the youth in the Hail Region in the digital era.
- To capture the truth about digital ignorance education among the youth in the Hail Region in the digital era.
- To assess the level of low social awareness among young people in the Hail Region in the digital era.
- To verify the causes of digital ignorance, engineering, and reduction of social knowledge in the youths of the Hail Region in the digital era.
- To establish the problems preventing the efforts to solve the issue of digital ignorance and enhance social awareness among the young population in the Hail Region in the digital age.
- To propose strategies on the mechanism for the solution of digital ignorance engineering from the perspective of social awareness of the young generation in the digital era in the Hail Region.

1.3. Study scopes and limitations

- Objective Scope: This research aims to analyze the issue of digital ignorance engineering and the lack

of youth in the digital era in Hail Region, the province that is small. It also aimed to identify the major difficulties in this phenomenon and, at the same time, to establish general mechanisms to increase awareness and make the process easier for informed intervention.

- Time Scope: The scope of the academic year of 2025 was the time frame of the investigation because the fieldwork, data collection, and interpretation of data were in 2025. This time constraint was considered appropriate since it was a reflection of the contemporary world of digitality that is applicable to the phenomenon under investigation.
- Spatial scope: The geographic context of the Hail Region was later used in the proposed research. A spatial boundary was set to provide contextual relevance and precisely pinpoint the phenomenon within a social and institutional context that was well recognizable.
- 4. Human Scope: The research was conducted with youths within the Hail Region, targeted by a study research design on the internet and digital platforms. The human scope was operationalized by taking 241 respondents with the descriptive survey procedures that were adopted in the study.

1.4. Study significance

The importance of the given study lies in the fact that it deals with the novel topic of digital ignorance engineering as a new emerging phenomenon in the field of scholarly studies within the scope of the Hail Region and how this phenomenon may be related to the lack of social awareness among youth. Theoretically, it is good for explaining the conceptual relationships that can be observed between digitally produced ignorance, digital triviality, and decreasing social responsibility, whereas the impact of social media is not discussed in much detail. It also perceives the phenomenon of youth awareness as a socially constructed effect stipulated by exposure to algorithms, the culture of influencers, and micro-doses of superficial content in the digital era. By doing so, the research inevitably contributes to the body of knowledge that digital environments have the power to change values, attention, and social activity, thereby enriching academic knowledge. This contribution contributes to the situating of the phenomenon in a more analytical perspective.

From a practical standpoint, the study has implications for educational institutions, the media, and policymakers in the Hail Region in creating campaigns, building awareness, and developing training methodologies that will increase youth critical thinking and awareness of proper digital behavior. This is especially relevant to the Hail Region, where there is a growing exposure of youth to misleading, harmful, and trivial digital content, and responses from coordinated institutions are limited. The study also serves as the basis for creating context-sensitive methods that can help minimize risks for youth online while building social

values and enabling meaningful involvement in community life. As such, its significance extends beyond the scope of learning debates and discussions on digital awareness to real-world intervention and policymaking. Overall, conceptual understanding and practical tips have been provided for addressing digital ignorance, engineering and enhancing the practice of socially responsible digital engagement.

2. Literature review

This section presents a critical review of prior studies by classifying the literature thematically and evaluating its methodological and theoretical contributions. The review identifies major methodological trends, theoretical foundations, areas of agreement and contradiction, and research gaps relevant to the present study. Existing studies have mainly examined youth exposure to social media environments, influencer cultures, and harmful or negative digital content, but they have rarely addressed digitally engineered ignorance and weakened social awareness as connected constructs (Adeane and Stasiak, 2024; Kobilke and Markiewitz, 2024; Yu et al., 2024). Most studies have focused on behavioral, emotional, or interactional outcomes, while fewer have examined wider forms of awareness, civic orientation, or value prioritization. Descriptive surveys and qualitative designs were the most common methodological approaches, whereas integrative and exploratory modeling designs remained limited (AlKhudari, 2023; Langlais et al., 2025; Tetteh and Kankam, 2024).

One recurring theme in the literature concerns platform-based power and figurative modeling. Studies on influencers, sociocultural issues, and digital visibility suggest that youth behavior may be shaped by perceived credibility, similarity, emotional appeal, and repeated exposure to visible online figures. In this respect, the online space should not be treated as a neutral communication environment but as a mediated setting that structures attention, visibility, and behavior (Adeane and Stasiak, 2024; Ferraro et al., 2024; Kobilke and Markiewitz, 2024). Another theme concerns psychosocial burden, with studies showing that intensive social media use may be associated with anxiety, sleep problems, appearance-related anxiety, and limited offline communication (Caner et al., 2022; Langlais et al., 2025; Yu et al., 2024). Larger survey samples may provide greater inferential confidence, but causal claims remain limited where cross-sectional designs are used.

Platform-based power and figurative modeling were among the initial similar themes. One of the first aspects, and also another element of the artwork that is generally considered, was modeling in platforms or figures. The research on influencers, on sociocultural aspects, and on digital visibility has always indicated the influence of a sign of credibility, similarity, and emotionally engaging content on the behavior of young people, as well as the fact that the

online space does not neutralize communication but rather shapes and conditions the behavior of young people (Adeane and Stasiak, 2024; Ferraro et al., 2024; Kobilke and Markiewitz, 2024). The findings, however, were heavily dependent on their qualitative interpretation or synthesis of an observation, and this gave richness to the context but limited the aspect of generalizability. Additionally, one more theme emerged under the category of psychosocial burden and anxiety: sleeping problems and anxiety about appearance on social networks and limited communication outside of the social networks were revealed due to intensive usage of social networks (Caner et al., 2022; Langlais et al., 2025; Yu et al., 2024). In this case, an increase in the size of the samples would enable greater inferential confidence to be attained, although the causal statements might remain limited by cross-sectional logic.

The third was "mediation, literacy, and institutional response." Other studies suggested that healthier interaction among youths exactly needed mediation by the parent, being digitally literate, or being an active bypasser, meaning that the outcome was socially regulated (Awad and Connors, 2023; Tetteh and Kankam, 2024). Such findings, however, were frequently analyzed based on the effectiveness of recommended interventions rather than their sustainability, and there was little evidence of intervention implementation; this stood in contrast to normative claims.

There were also some differences in comparative reading; some of the studies mentioned were on how social media is a medium of association and communication, while others were about distortion, rumor, and social fragmentation (AlKhudari, 2023; Tetteh and Kankam, 2024). Such differences were found to be due to contextual dissimilarity, choice of results, and even contrasting measurements of constructs, and not necessarily the incompatibility in theory.

The lack of evenness in methodological rigor in the corpus. It is noted that the larger sample size of survey studies provided more scope, but generally speaking, survey studies have the potential for the social desirability effect and common method bias, as well as lacking a comprehensive picture of how validity is addressed (AlKhudari, 2023; Caner et al., 2022). The interpretations of inspirational density and subtlety in qualitative research have, however, been found to be incomplete or to fail to sample clarity and transferability in the research provided (Adeane and Stasiak, 2024; Langlais et al., 2025). It is clear from the literature that there is an explanatory process that involves attention, emotions, and social interpretation that is constructed through digitally amplified content, modeling of the influencer, and repeated interaction, a process that can, over time, render awareness and social responsiveness offline. But the support of proximal psychological outcomes is stronger in comparison to multidimensional social awareness. The current study thus contributes to the previous study by gaining greater specificity to the

context of the constructs and their congruence. It addresses the paradoxical nature by investigating the link between the cognitive, media, social, and behavioral dimensions of digital ignorance and the weak social consciousness of youth in a well-defined context of Arabs.

3. Methodology

The quantitative method was used because the study aimed to measure digital ignorance, evaluate the low level of social awareness, and study the statistical relationship between the two constructs among the digitally active youth in the Hail Region. A cross-sectional descriptive correlational survey was found to be suitable for collecting standardized data from respondents who engaged with digital platforms within the time frame of the study. Probability-based methods are difficult to use to contact everyone in digitally active audiences when doing social research online (Lavrakas et al., 2022; Lehdonvirta et al., 2021). This is why the methodological approach used was supplemented to meet the needs of online survey research without surpassing the boundaries of the participants of the study.

This research design was a descriptive correlational survey rather than a systematic review/meta-analysis. The study methods started by determining the essence of the basic dimensions of digital ignorance engineering and the decrease of social awareness, and then the preparation of questionnaire items in relation to the theory and previous studies. The instrument was then analyzed for clarity and relevance and was expert-validated prior to the piloting and administration of the final instrument designed in electronic format. The sequence helped to ensure procedural consistency and linked the empirical analysis to the declared objectives of the study.

The sample comprised digitally active youths of the Hail Region whose access to online channels during the data collection period. The study was designed using a non-probability convenience sampling technique due to the nature of sampling (only digitally connected samples were selected) and the delivery method (completed via the Internet). A total of 241 participants completed the survey. In online contexts, probability-based access to all digitally active youth is often challenging (Lavrakas et al., 2022; Lehdonvirta et al., 2021), which made this type of sampling suitable for exploratory and correlational social research conducted on the internet. The results obtained are, however, only representative of the youth who participated in the study and should not be taken as representative of the entire youth population statistically in the study area (the Hail Region).

The data were gathered by an electronic questionnaire, which was created using Google Forms. The instrument included four aspects of digital ignorance engineering, four aspects of reduced social awareness, perceived problems, and

proposed solutions. This was measured on a three-point Likert scale (Yes = 3, To some extent = 2, No = 1). The format is chosen to give clearer and more easily distinguishable options to respond to from a wide range of digitally active respondents and to minimize ambiguity from judging the presence or absence of the behaviors or perceptions that are measured. Overall, the three-point scale was similar to the descriptive goal of the study, which was to illustrate the overall level and pattern rather than the fine-grained level of attitudinal differences. However, future research will have the benefit of having a 5-point Likert scale so as to gain more measurement sensitivity and a greater degree of response differentiation.

The validity of the content resulted from a literature review and expert review, which consisted of three faculty members of the University of Hail Region. On 20 participants (out of the sample), a pilot test was done. The reliability was determined using Cronbach's alpha and split-half reliability. The reliability of the dimensions of the instrument was high according to the importance of the coefficients.

Data were electronically gathered by the social media formal groups in the Hail Region between 1 March 2025 and 10 April 2025. The scoring of responses was done based on the predetermined three-point scale. Higher scores were associated with an increase in the construct measured.

All analyses were done using SPSS Version 30. The descriptive statistics were the frequencies, percentages, means, and standard deviations. Due to the study objectives, inferential analysis was done based on Pearson correlation, simple regression, multiple regression, independent-samples t tests, and one-way ANOVA.

The key concepts and terminologies can be summarized as follows:

- **Digital Ignorance Engineering:** The concept of digital ignorance engineering is the calculated meddling with online attention to display an increase in low-quality, misinforming, and emotionally manipulative materials, which damages users and reasonable perceptions of digital information and news (Žigo, 2026).
- **Digital Triviality:** The prevalence of superficial, sensational, and low-value online content is referred to as digital triviality. This process consumes users by shifting attention away from symbolic consumption and distraction instead of addressing the actual social, educational, and cultural concerns (Scharlach and Hallinan, 2023).
- **Algorithmic Curation:** Systematic use of digital content by machines, a set of rules and guidelines, using how "data" is used in terms of access, experience of the user, and the reality perceived by the user online, through machine-based selection, ranking, and personalization of online content (Bandy and Diakopoulos, 2023).
- **Social awareness:** "Empathizing with the other party; setting up the social situation; acting appropriately in the common social context in

order to foster empathy, responsibility, and positive interaction" (Eriksen et al., 2024).

- Critical digital literacy: Critical digital literacy can include the ability to access, question, doubt, interact with, and responsibly use digital information and platforms, as well as an awareness of the digital space and the power, prejudice, and threats it has enabled communities (Gutiérrez-Ujaque, 2024).

4. Theoretical framework

In this context, the theoretical framework was created to explain how the digitally engineered exposure may be connected to the lack of social awareness among youth. It tried to anticipate what could go wrong with citizens and their responsibility and focus on values when they would be faced with trivialized, manipulative, and algorithmically prioritized content. This, therefore, called for the integration of this kind, as earlier literature focused more on the problems of misinformation, influence effects, and excessive use of social media without regarding it as a system of ignorance production. The conceptualization of the relation of these dimensions to social awareness in Arab youth is less developed and less valid (Gómez-Calderón et al., 2025).

The Social Cognitive Theory was a better explanatory anchor point in the study owing to its ability to build upon that gap. It was selected because a theory explains how the interaction of cognitive factors and environmental cues, stimuli, or signals, along with modeled behavior and perceived rewards, affect cognition and behavior. It seemed to hold true in a scenario where young people weren't passive consumers; they were active and were interacting with digital spaces shaped by influencers, repetition, and algorithmic reinforcement. Current evidence shows that when mediated contexts are employed as a reward, teens fall for influencers' influence and acquire knowledge by observing, mimicking, and repeating (Al-Ansi et al., 2023; Engel et al., 2024).

Based on this, the framework also theorized that digital ignorance engineering would be conducted by observable socio-cognitive processes instead of abstract exposure. Selective attention was likely to be normalized and the cost of verification reduced with repeated encounters of trivial or misleading information and high rewards given to low-substance participation. These procedures might slowly overturn community-related judgment in line with a disjointed, reactive, and individualized disposition. This explanation thereby provides justifications for the strength of the cognitive and media effects rather than the social effects, as their confusions of perception are more likely to emerge earlier than changes in social embeddedness or identities of patterns of behaviors (Gagrčin et al., 2026).

Extrapolating that mechanism, the projected architecture of a relationship was multidimensional and disproportional rather than equal in its outcome,

as compared to equal. There were four subconstructs, two independent (cognitive, media, social, and behavioral) and two dependent (weak public-interest awareness, weak integration in the real world, excessive preoccupation with digital, and disorganized value prioritization). The framework predictively foresaw good relationships with the dimensions but not of the same intensity; as anticipated, the process of awareness loss was likely to emerge in the form of informational "muddiness" and changed priorities before truly becoming entangled in a form of compromised social inclusion. The pattern observed was theoretically consistent, and the greatest effects occurred when the constant exposure had the most direct effects on judgment, preoccupation, and interpretive habits (McGrew and Kohnen, 2024).

The study hypothesized that logic was thus a mechanism and not a description, which was compatible with the mechanism-based reasoning that is used in the logic. If simulations are still paying off for the immediacy and depthlessness of emotions and algorithmically enhanced attention, then the higher rates of digital ignorance engineering should go hand-in-hand with the loss of social awareness. The expectation was not expressed as a causal relation but with the theoretical justification that it was a correlation between the structured digital states and the structured social outcomes. From a security perspective, in the Hail-oriented and wider Arab context, the argument had a lot of merit, as the youth connect with increasingly emerging digital cultures where the existing safety nets are never balanced (Gómez-Calderón et al., 2025).

A multi-dimensional, scale-based format of survey-conducting youth perceptions and reported experiences was appropriate for this study to methodologically transform this framework into a descriptive correlational survey and to investigate theory-related patterns between the youth perceptions and reported experiences. In the study, different items were evaluated with professional review, pilot reliability, Pearson correlation, and regression models, as these would be suitable to evaluate interrelated and differentiated relationships among dimensions while avoiding undue inflation of the cause-and-effect relationship, which is required for the framework. In this way, the theory was evaluated by the patterned changes of cognitive, media, social, and behavioral markers indicating social awareness and the influence of these markers on social awareness changes. Although latent-variable modeling would have been desirable theoretically for a better structure of constructs in future studies, the current design was adequate to enable cross-sectional inference and interpretation (McGrew and Kohnen, 2024).

In total, all these points of argument justified the retention of Social Cognitive Theory as the main premise and the recognition of some of the restrictions in metaspace in the form of digitally saturated environments. One of the major strengths of such an approach is that the conduct of models,

selective reviews, and repetitive symbolic cues models judgment and the results in real-world contexts, making it quite relevant to the object of the study and the pattern of the research. It has been heavily maligned due to its predilection towards valuing platform power, algorithmic opacification, and political-economic domination through an individual-oriented approach to learning as opposed to systems architecture. The theory was critically used in the framework that interconnected the existential conditions of learning processes so that learning processes could be interpreted as continuous and could be received by the findings.

5. Results

The explanation of the results of the study in this part is logical in accordance with the research objectives, research processes, and processes of analysis. It starts with the psychometric aspects of the scale and the nature of the study population and continues with the description of the levels of the key variables, the perceived challenges, and suggestions for solutions. The items that were included in the questionnaire for each dimension of the study variables have been presented in tabular form in [Table 1](#) to clarify the measurement structure used to answer the research objectives. The 6 items on each of the 4 dimensions of digital ignorance

engineering and 6 items for each of the 4 dimensions of weakened social awareness warrant balanced and multidimensional coverage of both of the constructs, as can be seen in [Table 1](#). Moreover, they have marked 10 items in the difficulties axis and 10 items in the axis of the proposal; this would indicate the instrument was set up in a way that it could measure both main variables and also obstacles, as well as possible reactions. This structure also makes the instrument more analytically sound because it provides a spread of the items measured over the major dimensions that were of concern for this study.

[Table 2](#) shows high reliability in all dimensions measured in the youth questionnaire; hence, it is suitable for the study purpose. The alpha coefficients derived from Cronbach were from 0.808 to 0.925, with an overall coefficient of 0.920, which indicates good internal consistency and also good measurement stability. Split-half reliability of the items ranged from the Spearman-Brown coefficient of 0.808 to 0.982. The highest reliability values were for proposals, while those for the social awareness dimensions, which were lower. There was some measure of stability in the measurement of these areas. Overall, [Table 2](#) shows strong evidence of the reliability of the tool to allow for reliable statistical analysis.

Table 1: Distribution of questionnaire items across the study variables and questionnaire sections

Questionnaire section	Variable/dimension	Number of items
Independent variable: Digital ignorance engineering	Cognitive dimension	6
	Media dimension	6
	Social dimension	6
	Behavioral dimension	6
Dependent variable: Weakened social awareness	Weak awareness of the public interest and community responsibility	6
	Weak real-world social integration and interaction	6
	Excessive preoccupation with the digital sphere at the expense of social reality	6
	Disruption in the prioritization of social values and norms	6
Challenges	Difficulties facing efforts to counter digital ignorance engineering and weakened social awareness among youth in the digital age	10
Proposed solutions	Proposals for countering digital ignorance engineering to develop social awareness among youth in the digital age	10

The questionnaire comprised 48 items for the two main study variables, plus 10 items on challenges and 10 items on proposed solutions

The demographic and digital profiles of the participants in the study are shown in [Table 3](#) and are important for the interpretation of the results in the proper methodological context. The participating youth had a mean age of 23 years (SD +/- 3 years), and the average time they spent online was 7 hours per day (SD +/- 2 hours), compared with the average of 10 hours daily of exposure to digital environments measured for respondents. The sample consisted of a larger percentage of female respondents (75.5%) and of those respondents with some intermediate education (86.7%), with the majority being Saudi (65.6%) and Egyptian (26.6%). As for platform usage, TikTok is the most used at 50.6%, while Snapchat is at 42.7% and WhatsApp at 38.2%, with lower usage reported for Twitter, Instagram, and Facebook. Overall, [Table 3](#) shows that the study was conducted with digitally active young people, and thus the results should be interpreted as sample-based evidence and not as representative evidence

for all youth in the Hail Region. Based on the results in [Table 4](#), the overall level of digital ignorance engineering by youth in the digital era was of an intermediate level ($M = 2.25$ and $SD = 0.40$). The levels I was classified in were the social dimension ($M = 2.51$, $SD = 0.52$) and behavioral dimension ($M = 2.44$, $SD = 0.50$), which were at high levels, whereas the social dimension is at an intermediate level ($M = 2.14$) and the cognitive dimension level was the lowest level ($M = 1.93$, $SD = 0.58$). This pattern suggests that the level of digital ignorance engineering rose more in the social and behavioral dimensions than in the cognitive dimension, which represents a lack of homogeneity regarding digital ignorance engineering in the elements of the Hail Region.

The general social awareness within the Hail Region among young people regarding the digital age was of a medium level ($M = 2.02$, $SD = 0.54$) according to the data in [Table 5](#). Excessive

involvement in the digital sphere at the expense of social reality ($M = 2.06$) was followed closely by the breakup of the priorities of social values and norms ($M = 2.05$) and the weak awareness of the public interest and the responsibility of the community (M

$= 1.93$). The minor differences in the ranges suggest that the level of social consciousness, as reflected in the preference for value-adding cyber interactions as opposed to their social interactions, was not widely varying but most pronounced in the Hail Region.

Table 2: Reliability results of the youth questionnaire (N = 20)

Reliability measure	Statistic	Questionnaire section	Result
Cronbach's alpha	Coefficient value	Digital ignorance engineering	0.823
		Weakened social awareness	0.916
		Difficulties	0.808
		Proposals	0.925
		Overall instrument	0.920
	Degree of reliability	Digital ignorance engineering	High
		Weakened social awareness	High
		Difficulties	High
		Proposals	High
		Overall instrument	High
Spearman-Brown split-half reliability	Guttman split-half formula: coefficient value	Digital ignorance engineering	0.808
		Weakened social awareness	0.956
		Difficulties	0.944
		Proposals	0.982
		Overall instrument	0.938
	r value and significance	Digital ignorance engineering	0.682**
		Weakened social awareness	0.916**
		Difficulties	0.896**
		Proposals	0.966**
		Overall instrument	0.899**
Guttman split-half reliability	Strength of correlation coefficient	Digital ignorance engineering	Strong positive
		Weakened social awareness	Strong positive
		Difficulties	Strong positive
		Proposals	Strong positive
		Overall instrument	Strong positive
	Coefficient value	Digital ignorance engineering	0.811
		Weakened social awareness	0.956
		Difficulties	0.945
		Proposals	0.983
		Overall instrument	0.947
	Degree of reliability	Digital ignorance engineering	High
		Weakened social awareness	High
		Difficulties	High
		Proposals	High
		Overall instrument	High

**. Indicates significance at the 0.01 level

Table 3: Demographic and digital characteristics of the study population (N = 241)

Section	Characteristic	Category/measure	Value	%
Quantitative characteristics	Age	Mean (SD), years	23 (3)	—
	Number of hours of Internet use	Mean (SD), hours/day	7 (2)	—
Gender	Gender	Male	59	24.5
		Female	182	75.5
		Total	241	100
Educational status	Educational status	Basic education	18	7.5
		Intermediate education	209	86.7
		University education	14	5.8
		Total	241	100
Nationality	Nationality	Saudi	158	65.6
		Egyptian	64	26.6
		Jordanian	4	1.7
		Yemeni	8	3.3
		Emirati	7	2.9
		Total	241	100
Most-used digital platforms	Digital platform	TikTok	122	50.6
		Snapchat	103	42.7
		WhatsApp	92	38.2
		Twitter	70	29.0
		Instagram	69	28.6
		Facebook	42	17.4

SD: Standard deviation; —: Not applicable; Frequencies and percentages are reported for categorical characteristics

Table 4: Level of digital ignorance engineering among youth in the digital age

Dimensions	Arithmetic mean	SD	Level	Rank
Cognitive dimension	1.93	0.58	Intermediate	4
Media dimension	2.14	0.51	Intermediate	3
Social dimension	2.51	0.52	High	1
Behavioral dimension	2.44	0.5	High	2
Overall dimensions of digital ignorance engineering	2.25	0.4	Intermediate level	

Table 5: Level of weakened social awareness among youth in the digital age

Dimensions	Arithmetic mean	SD	Level	Rank
Weak awareness of the public interest and community responsibility	1.93	0.63	Intermediate	4
Weak real-world social integration and interaction	2.03	0.66	Intermediate	3
Excessive preoccupation with the digital sphere at the expense of social reality	2.06	0.64	Intermediate	1
Disruption in the prioritization of social values and norms	2.05	0.6	Intermediate	2
Overall dimensions of weakened social awareness	2.02	0.54	Intermediate level	

As shown in Table 6, the overall degree of challenge that hinders anti-digital ignorance engineering and fights against social awareness among youth in the digital era is very high ($M = 2.45$, $SD = 0.51$). The most important of these was the lack of digital awareness skills of a considerable number of families ($M = 2.61$, $SD = 0.62$) and the lack of digital awareness among a significant number of young people ($M = 2.58$, $SD = 0.67$), which makes it more difficult for young people to tackle misleading information on the internet. Lack of a conscious digital role model also proved to be a significant barrier ($M = 2.53$, $SD = 0.74$), as did poor control over the content shared on social media ($M = 2.50$, $SD = 0.73$) and less awareness of the family about potential risks of digital use ($M = 2.49$, $SD = 0.75$).

Other obstacles, such as the inability of young people to differentiate between severe and insignificant online information ($M = 2.48$, $SD = 0.74$), were also obvious. Although other barriers (such as the domination of entertaining content on digital sources, $M = 2.33$, $SD = 0.79$, or the low number of national awareness campaigns, $M = 2.17$, $SD = 0.87$) were obtained with lower means, they are still considered to be meaningful barriers. On the whole, the results help to understand that there are some critical problems to address in the history of digital ignorance engineering and reducing bad social awareness among the young people of the Hail region, and the problems of education, family, and guidance play a major role in addressing the problem.

Table 6: Difficulties facing efforts to counter digital ignorance engineering and weakened social awareness among youth in the digital age

Dimensions	Arithmetic mean	SD	Level	Rank
The absence of digital awareness among many young people represents a major challenge in confronting misleading information on the Internet	2.58	0.67	High	2
The lack of educational or awareness programs directed at youth regarding the risks of digital content negatively affects their social awareness	2.42	0.77	High	7
Weak coordination between educational and media institutions limits the effectiveness of efforts to confront digital ignorance	2.41	0.77	High	8
The dominance of entertaining and sensational content on digital platforms weakens the chances of delivering educational content directed at youth	2.33	0.79	Intermediate	9
The lack of digital awareness skills among many families and teachers weakens their role in guiding youth	2.61	0.62	High	1
There are not enough national campaigns that address the danger of digital ignorance and digital triviality directly	2.17	0.87	Intermediate	10
Many young people find it difficult to distinguish between serious content and trivial content on digital platforms	2.48	0.74	High	6
Weak oversight of content published on social media hinders efforts to regulate digital awareness	2.5	0.73	High	4
Weak awareness among some families of digital risks makes them unable to guide their children or reduce their susceptibility to misleading content	2.49	0.75	High	5
The absence of a conscious digital role model makes youth vulnerable to being influenced by non-purposeful content	2.53	0.74	High	3
Overall difficulties	2.45	0.51	High level	

As shown in Table 7, the overall mean score for suggestions to combat engineering digital ignorance and advocate social awareness in youth of the Hail Region was 2.59 with a standard deviation of 0.51, indicating that the mean score was high. The highest-ranked initiatives involved the introduction of digital citizenship within the school curriculum in the students' work and interactive digital programs in school and university (both $M = 2.64$); another significant area of interest was the use of digital programs to motivate youth to produce meaningful digital products ($M = 2.63$). Though the strengthening of the partnership between the media and universities was the last to be rated ($M = 2.48$), it also belonged to the category of high level. The trend has shown that the best profiles that were proposed and supported included educational integration and interactive interactions, as well as youth participation in the Hail Region. The correlation results between digital ignorance engineering and

weak social awareness of the youth in the digital age are displayed in Table 8. The results showed that there is a statistically significant positive correlation between the overall score of engineering digital ignorance and the overall score of social awareness, which is 0.567 and $p < 0.01$, meaning it is a moderate positive association within the sample. The greatest correlation was seen in the cognitive dimension with overall weakened social awareness ($r = 0.551$), followed by the media dimension ($r = 0.482$), the behavioral dimension ($r = 0.412$), and the social dimension ($r = 0.271$). The pattern indicated that digital ignorance engineering was significant and varied across dimensions in relation to the degraded social awareness.

The most significant correlation was found with the cognitive dimension, indicating that poor social awareness is more correlated with the way that youths perceive, assess, and process digital information.

Table 7: Proposals for countering digital ignorance engineering to enhance social awareness among youth in the digital age

Dimensions	Arithmetic Mean	SD	Level	Rank
Introducing digital citizenship courses to raise youth awareness of the dangers of misleading information	2.56	0.71	High	8
Strengthening partnerships between universities and the media may make a difference in confronting digital triviality	2.48	0.76	High	10
Encouraging youth to produce purposeful digital content is one of the most successful means of countering digital ignorance engineering	2.63	0.65	High	3
Designing interactive platforms dedicated to teaching critical thinking may help enhance youth awareness	2.57	0.71	High	7
Engaging influencers in well-designed awareness campaigns may make awareness messages more acceptable to youth	2.55	0.72	High	9
The adoption of interactive digital programs by schools and universities contributes to reducing susceptibility to misleading content	2.64	0.64	High	2
Using educational and interactive digital games can attract youth toward more awareness-oriented content	2.6	0.69	High	6
Integrating digital citizenship concepts into student activities enhances social awareness	2.64	0.63	High	1
Launching youth campaigns led by university students helps build awareness that emerges from youth themselves	2.61	0.66	High	4
Creating innovative interactive digital content in simplified youth-oriented language can be a powerful tool for resisting digital ignorance among youth	2.6	0.68	High	5
Overall proposals	2.59	0.51	High level	

Table 8: The relationship between digital ignorance engineering and weakened social awareness among youth in the digital age

Independent variable	Indicator	Weak awareness of the public interest	Weak social integration	Excessive preoccupation with the digital sphere	Disruption in prioritization	Overall weakened social awareness
Cognitive dimension	Coefficient value (strength)	0.540** Moderate positive	0.451** Weak positive	0.440** Weak positive	0.461** Weak positive	0.551** Moderate positive
Media dimension	Coefficient value (strength)	0.398** Weak positive	0.411** Weak positive	0.434** Weak positive	0.407** Weak positive	0.482** Weak positive
Social dimension	Coefficient value (strength)	0.244** Weak positive	0.187** Weak positive	0.254** Weak positive	0.247** Weak positive	0.271** Weak positive
Behavioral dimension	Coefficient value (strength)	0.396** Weak positive	0.289** Weak positive	0.369** Weak positive	0.363** Weak positive	0.412** Weak positive
Overall dimensions of digital ignorance engineering	Coefficient value (strength)	0.523** Moderate positive	0.443** Weak positive	0.492** Weak positive	0.488** Weak positive	0.567** Moderate positive

**: Indicates significance at 0.01

Table 9 shows the results of the simple regression analysis performed to assess the effect of digital ignorance engineering on social awareness in the digital age among the youth. The overall model was statistically significant, with the total score of digital ignorance engineering explaining 32.2% of the variance in weakened social awareness ($R^2 = 0.322$, $F = 113.273$, $p < 0.01$). The result shows that digital ignorance engineering had a meaningful explanatory contribution within the studied sample; however, not enough variance was explained by the

model, leaving much scope for other factors outside the model. The cognitive dimension explained the most ($R^2 = 0.304$), followed by the media dimension ($R^2 = 0.232$), behavioral dimension ($R^2 = 0.170$), and social dimension ($R^2 = 0.074$) at the dimensional level. The pattern suggests that the impact of the digital ignorance engineering was not uniform across the components of this but rather was more strongly related to processes of youth perception, evaluation, and reacting to digital information that are mediated by cognition and media.

Table 9: Simple regression analysis of the effect of digital ignorance engineering on weakened social awareness among youth in the digital age

Independent variable	B	t	R	R^2
Cognitive dimension	0.512	10.219**	0.551**	0.304 (30.4%)
Media dimension	0.516	8.495**	0.482**	0.232 (23.2%)
Social dimension	0.281	4.357**	0.271**	0.074 (7.4%)
Behavioral dimension	0.447	6.998**	0.412**	0.170 (17.0%)
Overall dimensions of digital ignorance engineering	0.763	10.643**	0.567**	0.322 (32.2%)

**: Indicates significance at 0.01

6. Discussion

The results of the present study show that digital ignorance engineering showed a significant relationship with the lack of social awareness among youth participating in the current study. More

specifically, the outcomes showed that this correlation is not the same for each aspect of digital ignorance engineering. The cognitive dimension had the most explanatory power, followed by the media dimension, and the least explanatory power for the social dimension. Theoretically significant pattern:

The pattern indicates the theoretical inference that digital ignorance engineering does not directly occur on the objective level of the things themselves but occurs first as the cognitive organization of attention and interpretation, verification, and judgment. The phenomenon should not be understood just as such exposure to digital platforms from this point of view. Instead, it's a process that takes place and has been designed as such to steadily modify the conditions of awareness itself.

The cognitive dimension is predominant, which aligns with previous studies that view digital vulnerability as an issue of attention, evaluation, and judgment. [Kozyreva et al. \(2023\)](#) suggested that misleading DEs can grab the limited attention span and diminish reflection. According to [Žigo \(2026\)](#), digital systems influence informational exposure and user perception. Like [Gutiérrez-Ujaque \(2024\)](#) and [McGrew and Kohnen \(2024\)](#), critical digital literacy, source evaluation, and verification skills are all highlighted in relation to combating misinformation. These present results build on this scholarship tradition, suggesting that the cognitive dimension is not the only element. Rather, it is the shortest route through which the phenomenon of digital ignorance engineering seems to have a detrimental effect on social awareness.

This outcome could also stem from the organization of today's digital platforms. There are instances where the algorithmic recommendations, visibility of content created by influencers, repeated exposure to content, and emotionally charged appeals do not immediately or directly change social behavior. Instead, they first form users' perceptions, beliefs, biases, what is not important to them, and what is of social importance. In this aspect, the media dimension is used to solidify the cognitive dimension to arrange the informational environment in which judgment is made. This interpretation is in keeping with [Bandy and Diakopoulos \(2023\)](#), who explained that algorithmic curation frames the experiences that users have online. It is also in line with the findings of [Adeane and Stasiak \(2024\)](#), [Kobilke and Markiewicz \(2024\)](#), [Al-Ansi et al. \(2023\)](#), and [Engel et al. \(2024\)](#), who found that the perceptions and behavioral orientations of the youth can be influenced through the use of influencers, visibility, modeling, and repeated exposure.

It does not imply that because of the relatively poor performance of the social dimension, digital ignorance engineering is of little social relevance. Instead, it might be a sign of a more indirect and mediated and latently apparent social influence compared with the more directly apparent cognitive or media impact. Such transitions in civic responsibility, interactions with the world, and social integration could take longer to 'materialize' in the real world. These can also be mediated by family interactions, schools, cultural norms, and institutional support. This is in line with [Langlais et al. \(2025\)](#), who suggested that excessive usage of TikTok could negatively impact time spent and mood, as well as lead to inferior task completion and

offline communication. This is also supported by [Yu et al. \(2024\)](#), who found a connection between social media-intensive usage and sleep disruption, emotional stress, and lowered well-being.

This pattern may be confirmed by the other contexts found in the Hail. Weakened social interaction might not be immediately apparent if family, educational, and cultural structures continue to exist even in the face of cognitive and media-related vulnerabilities. From this point of view, the absence of social impact is not an absence of social impact but rather a filtering of social impact through contextual buffers, the weaker ones. These buffers can take the form of family guidance, educational norms, cultural expectations, and/or institutional kinds of support. These can delay or moderate the manifestation of social disorganization. This interpretation allows for a more context-specific reading of the findings and excludes the concept of digital influence as a direct, unconditional, and uniform process.

These results are theoretically generalizable to the study and its application of SCT. The theory is still relevant to understanding how judgment and behavior could be influenced by observing, modeling, repeating, and perceived rewards in mediated environments. This aligns with [Al-Ansi et al. \(2023\)](#), whose research found that social media influencers can influence adolescents via visibility, modeling, and repetition, and with [Engel et al. \(2024\)](#), who found that social media influencers can influence via visibility, modeling, and repetition. In spite of this, the present results indicate that the SCT should be adapted to consider the characteristics of the platform architecture and the algorithmic visibility. The most obvious mechanism of digital ignorance engineering seems to be the cognitive pathway. In comparison, the social pathway, which can be indirect, delayed, or mediated by other personal and contextual factors.

This also supports the resolution of the apparent conflicts in the literature at the time. [AlKhudari \(2023\)](#) stated that some researchers have used social media for connecting and forming relationships. Other research has focused on distortion, social burden, influence, and disjointed engagement. The present results indicate that these jobs are not necessarily mutually exclusive. The digital platforms can be a potential facilitator for connection and at the same time create cognitive vulnerabilities based on the type of content, critical literacy, support systems offline, and the logic of algorithmic exposure. Hence, the present study provides additional differentiated interpretations. There may be cognitive effects, effects on the media, that can occur sooner and more intensely, as well as social effects, which may take longer and vary according to culture and the protective effects of family or education.

The findings suggest that, at the practical level, interventions need not only to be based on general awareness and/or moral warnings about digital misuse. The cognitive dimension was the largest

explanatory factor, so with this it would be preferable to prioritize critical digital literacy, skills for verifying sources, algorithmic awareness, checking the credibility of sources, and the capacity to recognize serious content from trivial, sensational, and manipulative content. This recommendation aligns with those of [Kozyreva et al. \(2023\)](#), [Gutiérrez-Ujaque \(2024\)](#), and [McGrew and Kohnen \(2024\)](#), who all highlighted the need to enhance users' abilities to evaluate in the digital context. Educational institutions in the Hail Region may thus be required to incorporate formal training programs into the curriculum focusing on digital judgment and digital misinformation resistance, as well as reflective media use. This could also be taken up for extension in the activities of students and the awareness programs led by the university.

The medium's low-to-medium relative importance also indicates the need to intervene in platform usage, platform credibility, platform recommendation processes, and the emotional nature of viral content. [Bandy and Diakopoulos \(2023\)](#), [Adeane and Stasiak \(2024\)](#), [Kobilke and Markiewicz \(2024\)](#), and [Engel et al. \(2024\)](#) agree with this implication. These research findings reveal the consequences of algorithmic visibility and algorithmically driven behavior of influential people on youth perceptions and orientations. Conversely, actions related to the social dimension need to be planned in the form of longer-term interventions, aiming to consolidate civic responsibility, build relationships (without screens), support parents, engage young people, and promote volunteering and participation in the community. These interventions shouldn't be restricted to campaigns in the short term. Awareness grounded in social issues is likely to be more sustained by repeated practice, institutional reinforcement, and long-term involvement with the community.

There are also a few other possibilities to consider. This salience of the cognitive aspect might be partly dependent on the form and content of the questionnaire, since the cognitive and media aspects can more easily be perceived and reported by the respondents than bigger changes in social behavior. The less favorable social dimension could also be a result of the socio-demographic nature of the sample. It also may exhibit the continued relationship of the participants with the family and educational settings. The second alternative is that social effects are rather indirect via cognitive and media exposure than in direct terms. There is also a cross-sectional design constraint in the form of an inability to make causal inferences. Self-reported information also may make the presence of response bias more likely, especially for questions concerning social responsibility and interaction in real life.

Thus, the results presented should be looked upon as an indication of associational patterns in the study sample and not as proof of a causal deterministic sequence. The above-mentioned explanations should be tested in the future using longitudinal designs, mediation models, qualitative

interviews, and comparisons. These designs would enable researchers to see if cognitive vulnerability manifests itself as decreasing social awareness over time. They would also determine if the limited social dimension is an actual limitation in the social effect, an under-effect, or a measurement limit in this study. This would offer more empirical evidence to support the development of staged interventions, starting with cognitive protection, then on to media literacy, and finally to support ongoing social and civic participation.

7. Conclusion

The study has found that digital ignorance engineering has a significant correlation with the effect of social awareness that is low among youth in the Hail Region. The results indicated that both digital ignorance engineering and lowered social awareness were moderate, and there was a statistically significant positive relationship between the two constructs. Digital ignorance engineering accounted for a relevant amount of variation in poor social awareness, with the cognitive and media dimensions having the greatest effects. The results indicate the need for interventions targeting critical thinking, media awareness, and responsible use of digital media among youth. This is the main contribution of the study, as it introduces digital ignorance engineering as an object that can be measured and is multidimensional in a social context in the Hail region.

Information from the findings should be used to design educational and institutional interventions in order to enhance digital citizenship and critical analysis of online content for the youth in the Hail Region. This can involve curriculum integration, interactive programs, media initiatives, targeted youth engagement, and awareness coalitions. The results of this study should be considered with the study's limitations in mind, as it has a cross-sectional design and non-probability sampling techniques were used, as well as self-reported questionnaire data. It is also important to note that the sample consisted mainly of women, so the findings may not apply to the broader population of girls and women. Although these drawbacks apply, the results confirm that digital ignorance engineering is a multi-dimensional educational and social problem in the Hail Region. The cognitive and media aspects seem to be the most pertinent ones for intervention. Longitudinal, comparative, and gender-balanced designs should be used in future studies to assess the effectiveness of educational and awareness-based responses over time.

This study has some methodological restrictions that should be taken into account. The cross-sectional design cannot make any causal conclusions about the relationship between digital ignorance engineering and decreased social awareness. The findings are thus representative of relationships within the sample and do not represent cause-and-effect relationships. Secondly, the study was self-

administered in terms of filling in the questionnaires, which could have resulted in response bias, such as a tendency toward social desirability bias and/or participants' inaccurate perceptions of social awareness and their own digital behavior. Third, the sample was mainly composed of females, as female respondents accounted for 75.5% of the sample. The results may not be generalizable to male youth, and gender-balanced samples would need to be used in future studies to explore potential gender differences in the results. These limitations should be taken into consideration when trying to interpret the findings and when planning further research on digital ignorance engineering and social awareness amongst young people.

List of abbreviations

ANOVA	Analysis of variance
B	Regression coefficient
F	F statistic
M	Arithmetic mean
n	Sample size
p	p-value
r	Correlation coefficient
R	Correlation coefficient
R ²	Coefficient of determination
SCT	Social cognitive theory
SD	Standard deviation
SPSS	Statistical package for the social sciences
t	t statistic

Acknowledgment

This research has been funded by the Scientific Research Deanship at the University of Hail, Saudi Arabia, through project number "RCP-25 099."

Compliance with ethical standards

Ethical considerations

The study received ethical approval from the relevant ethics committee (IEB No. HAP-08-L-158) on 19 January 2026. Participation was anonymous, and no personally identifiable information was collected. The responses were used solely for academic purposes and were handled confidentially.

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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