

Digital citizenship and social media impact on Saudi family cohesion: A vision 2030 perspective



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ABSTRACT

The rapid surge of information in the digital era has significantly impacted social life in the Kingdom of Saudi Arabia. In response, digital citizenship has emerged as a topic of considerable discussion, primarily centered around social networking programs. This study aims to provide a comprehensive overview of digital citizenship, addressing pertinent issues for both citizens and policymakers in Saudi Arabia. Employing a descriptive approach, the research seeks to gauge the level of awareness among social media program users in the Kingdom concerning the dimensions of digital citizenship within the framework of Vision 2030. The findings reveal that the development of digital citizenship in Saudi Arabia faces obstacles, primarily arising from the improper use of technology. Key elements of digital citizenship in the country encompass digital literacy, digital ethics, digital access, and digital participation. Moreover, the study indicates that male and female respondents possess a moderate level of awareness regarding these facets of digital citizenship. As a recommendation, the research advocates for the expansion of digital citizenship studies into various disciplines, such as education, law, engineering, medicine, management, computer science, economics, and psychology.

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1. Introduction

In recent decades, there has been a remarkable and rapid proliferation of Internet usage within the Kingdom of Saudi Arabia. As of the year 2022, the count of Internet users has surged to 29.30 million, encompassing approximately 82.3% of the nation's entire populace (Alotaibi and Campbell, 2022). Saudi Arabia has cultivated a substantial digital community, ardently striving to ensure equitable digital access for all citizens, including pervasive high-speed Internet connectivity.

Nevertheless, this expansive technological transition has exposed Saudi Arabia to a gamut of challenges and threats, encompassing cyber threats, cyberbullying, and identity impersonation. In response to these concerns, the Saudi government took proactive measures by instituting the National Committee for Digital Transformation, as decreed by

royal command (No. 49584, dated 10-29-2017). This committee was tasked with formulating comprehensive policies and strategies pertaining to digital transformation across public agencies (Alhazmi et al., 2022).

Furthermore, the establishment of the Digital Transformation Unit played a pivotal role, serving as the executive arm of the aforementioned committee and spearheading the nation's endeavors in digital transformation, thereby underscoring Saudi Arabia's commitment to harnessing the full potential of the digital realm.

The concept of digital citizenship is new in Saudi Arabia (Alotaibi and Campbell, 2022). It emerged over the past few years with the aim of creating a framework for the effective use of technology. Digital citizenship refers to enhancing the ability to interact with people digitally, which requires effective social communication skills in a responsible manner (Pangrazio and Sefton-Green, 2021). Moreover, digital citizenship focuses on investing digital tools in building social relationships and solving real and virtual problems (Milan, 2015). The most important is how citizens should be responsible and conscious about the real and virtual world.

Conversely, social media platforms have assumed a pivotal role within the societal fabric of Saudi

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Arabia. Whether it be Facebook, Snapchat, Twitter, or LinkedIn, these digital mediums have become integral components of the Saudi social landscape. In essence, they have come to symbolize various facets of Saudi society, and each individual user engages with them on a personal level, utilizing these platforms as conduits for sharing content that aligns with their preferences and objectives (Almomani et al., 2021).

As a result, there are some users who choose to do some activities on social networks, which gives a digital dimension to citizenship (Alhazmi et al., 2022). Social media in Saudi Arabia has created an environment in which people feel as if they are in real life. Thus, this situation promotes a certain digital citizenship with a great capacity for awareness, organization, and action. On these platforms, there is participation that encourages internet users to contribute and give their opinions, thus removing the barrier between the public and the media. In its Vision 2030, the Kingdom of Saudi Arabia has prioritized digital transformation, spreading digital awareness, and paying attention to social networks, including digital citizenship within one of the initiatives to employ ICT in its institutions which included plans to train individuals to spread and apply digital citizenship for the development of digital skills (Al-Tayyar, 2014). In general, the current study aims to explore the degree of awareness of users of social media in Saudi Arabia about the elements of digital citizenship. The study is expected to present a theoretical and practical position that helps users of social networking programs to be more positive in dealing with digital technology. According to the Kingdom's Vision 2030.

2. Literature review

The advent of digital technology has effectively transformed the global landscape into a closely interconnected community, facilitating seamless interactions among individuals from diverse geographic locations. This profound technological revolution has given rise to the concept of digital citizenship, which is particularly pertinent for digital natives. These individuals, who have grown up in the digital age, are required to possess a comprehensive understanding of the established norms, regulations, and ethical principles governing the responsible and constructive utilization of technology. Such awareness is paramount to ensure the optimal and beneficial utilization of digital tools and resources.

To gain a comprehensive understanding of the concept of e-citizenship, it is imperative to delve into the myriad of definitions and approaches put forth by scholars. Despite certain nuances in their perspectives, these definitions share a common essence, as exemplified by Almomani et al. (2021), who assert that e-citizenship encompasses the set of values that digital citizens embrace in their interactions with technology. Similarly, as elucidated by Alhazmi et al. (2022), it entails a collection of rules and regulations adhered to for the optimal and

ethical utilization of technology, a necessity for all citizens. Furthermore, from the vantage point of Barassi (2017), digital citizenship signifies the preparation of individuals and the imparting of knowledge regarding the judicious and appropriate use of various technological tools.

In summation, digital citizenship can be distilled as the astute management of technology. It is not merely a technological construct but rather a cultural ethos that must be ingrained within the psyche of all digital users.

The term "digital citizens" denotes individuals who seamlessly integrate computer-based technology into their daily lives while fulfilling their responsibilities and conducting their affairs (Pangrazio and Sefton-Green, 2021).

Barassi (2017), Emejulu and McGregor (2019), and Mahadir et al. (2021) confirmed the impact of technology on those who deal with it, so they are considered good "digital citizens," they spend more time in their digital world than they do with their family and friends, which affects their lifestyle.

Prasetiyo et al. (2021) and Al-Thubetat et al. (2023) found that individuals in the digital age consider the Internet as an important means of carrying out most of their tasks. Although the use of digital technology is popular with young people, they are not fully aware of its potential. And they may sometimes be bad users of that technology. Thus, they need to become conscious learners "to be, as Gaia et al. (2021) pointed out, intelligent recipients of information as well as positive contributors to it.

Digital citizenship stands as an obligatory constituent within 21st-century education. Consequently, the absence of effective digital citizenship education would potentially curtail the Internet's capacity to yield positive outcomes and contributions to society.

Perhaps the most prominent goals of digital citizenship are as follows (Marchal et al., 2021; Prasetiyo et al., 2021):

1. Learning how to behave appropriately in the online environment.
2. Emphasizing the importance of information, intellectual property, and resource protection.
3. Stimulating and preventing the misconduct of other digital citizens.
4. Calling to avoid sharing and publishing inappropriate or harmful information.
5. Identifying types of digital piracy.
6. Learning how to work together and appreciating what people have and what they use.

Digital citizenship refers to individuals who have good experience and knowledge in accessing the internet through computers, tablets, mobile phones, etc. Digital citizenship is the "standard for the appropriate and responsible use of technology" (Mooseder et al., 2023). Hence, citizenship is delineated by distinctive attributes, with the foremost among them being: 1. A Humanitarian Process: This facet encompasses initiatives aimed at

advancing the welfare and development of diverse demographic groups. 2. A Social Process: Its objective is the preservation and perpetuation of the societal culture (Mahdi, 2018). An organized and planned process to pursue benefits and gains in digital environments (Almomani et al., 2021).

A purposeful process with clear strategic goals, looking forward to reaching a conscious and informed digital citizen with sufficient knowledge of the digital world (Pangrazio and Sefton-Green, 2021). A value process: In its content, it aims to form a value framework or an internal insight that controls the user's work in digital environments (Suson, 2019).

Emejulu and McGregor (2019) referred to the way we need to develop our thinking by recognizing that the skills required to thrive as a digital native go beyond just being safe online. Mahadir et al. (2021) emphasized that these are skills people do not learn from simply watching adults around them, but individuals must challenge themselves to do better.

Among the most prominent digital citizenship skills the following can be mentioned (Choi, 2016; Emejulu and McGregor, 2019):

- Digital citizen identity: It refers to the ability to build and manage a healthy identity online.
- Screen time management: It refers to the ability to manage screen time, multitasking, and one's engagement in online games and social media with self-control.
- Cyberbullying management: It refers to the ability to detect and deal with cyberbullying cases wisely.
- Cyber security management: It refers to the ability to manage various electronic attacks and protect a person's data by creating strong passwords.
- Privacy management: It refers to the ability to protect the privacy of others, and to deal with the freedom of action in all personal information shared via the Internet.
- Critical thinking: Refers to the ability to differentiate between true and false information, good and harmful content, and trustworthy and suspicious online communications.
- Digital footprints: It refers to the ability to responsibly manage and understand the nature of digital footprints and their real-world effects.
- Digital empathy: It refers to the ability to understand and empathize with the needs and feelings of others online.

Almomani et al. (2021) confirmed that in order to help raise the level of awareness among individuals, and in order to provide them with the necessary indicators of the concepts of digital citizenship, and to reach their development, this requires going through stages to develop their digital citizenship, which are as follows. The progression through various stages is integral in the cultivation of digital literacy:

1. The Awareness Stage: This initial phase focuses on broadening the cognitive horizons of individuals,

equipping them with the capacity for discernment and education in the realm of digital media.

2. The Guided Practice Stage:** In this stage, the emphasis shifts towards furnishing individuals with heightened awareness, all within an environment that fosters introspection and exploration, leveraging technology as a tool for learning.
3. The Demonstration and Modeling Stage:** This subsequent phase is centered around the presentation of exemplary, positive models illustrating the judicious utilization of technology. (Alotaibi and Campbell, 2022).

The stage of feedback and behaviour analysis: (Analysis and Feedback) is the stage of providing opportunities for individuals to discuss their uses of digital technologies, leading to the stage of freedom to provide constructive criticism, and recognition of the proper use of technology (Ben Ltaifa and Derbali, 2022). Digital citizenship has three axes that have been agreed upon by many studies (Aðalsteinsson et al., 2014; Almomani et al., 2021; Ghamrawi, 2018). These axes have been identified in order to help contribute to preparing the modern citizen who is able to use digital technology and its proper and safe use. These topics are as follows.

The first axis is the axis of education, and it includes three dimensions:

- The first dimension is digital culture: It is necessary to know how to use technology resources themselves, and not how to use them appropriately. One of the most important cases of digital culture is learning digital basics, reviewing the electronic resources, and how accurate and true their content (Pangrazio and Sefton-Green, 2021).
- The second dimension is digital communication: It is necessary to achieve appropriate digital social communication while communicating with others and educating individuals about the ethics and rules that must be followed (Veuglers, 2021).
- The third dimension: Digital commerce: It includes buying and selling via the Internet, and educating individuals about digital commerce, and preparing them to become smart consumers while shopping online (Almomani et al., 2021).

The second axis is the axis of respect, and it includes three dimensions:

- The first dimension is digital access: It means equality, availability, and opportunities for individuals, taking into consideration individual differences in all social, economic, and geographical conditions, with regard to technological access (Alotaibi and Campbell, 2022).
- The second dimension, Standards of Digital Behavior: With technological development, education is no longer the responsibility of parents only, but rather has led to highlighting the role of

specialists and educators in dealing with digital behavior issues and confirming the recognition of the basics of digital behavior rules, which is based on the principle of respect (Ahmad et al., 2022).

- The third dimension is digital Laws: A digital law has been introduced to protect digital users and is present in the Kingdom of Saudi Arabia under the name of the Anti-Cybercrime system, and any violation of the laws of this system leads to real penalties. This issue must be addressed through awareness and clarification of the penalties that result from some irresponsible behaviors.

The third axis is the axis of protection, which includes three dimensions:

- The first dimension is digital rights and responsibilities, this axis deals with a statement of the requirements and freedoms provided, which must educate individuals about the existence of a law that preserves their electronic rights (Choi, 2016).
- The second dimension is health and Digital Welfare: Individuals must be aware of the need to be cautious and beware of the potential physical and psychological risks that may happen to them as a result of their use of technology. They must rationalize the use of technology in a responsible way to maintain their health (Almomani et al., 2021).
- The third dimension is digital Security: To ensure safety, electronic precautions must be taken, so individuals must know how to protect their electronic data and information by using protection programs and other programs (Kavada, 2015; Suson, 2019).

Comprehending these axes holds paramount significance as a tool for assessing both favorable and unfavorable conduct, delineating the boundaries of ethical behavior within digital transactions, and fostering a sense of accountability. It also serves to cultivate a culture of engagement and collaboration among individuals, facilitates the adept handling of digital issues, and augments understanding of their inherent intricacies. This understanding extends to recognizing the societal and cultural challenges prevalent in the digital realm, enabling proficient technological utilization, and cultivating responsible digital behavior. The Kingdom of Saudi Arabia has exhibited a profound acknowledgment of the significance of digital citizenship, as underscored by its Vision 2030 initiative launched in 2016. This visionary agenda, among its myriad objectives, places notable emphasis on the imperative of education and training investments, ensuring the provision of requisite knowledge and skills for the digital era (Almomani et al., 2021). Vision 2030 includes a set of values, which is one of the requirements for preparing the digital citizen, including the value of integrity and honesty (Alotaibi and Campbell, 2022) and the value of justice, the value of accountability, and the value of mutual

respect. Thus, it is clear that the values of Vision 2030 are consistent with the values of digital citizenship, which must be among the requirements for preparing a digital citizen.

The vision also included digital skills that must be mastered by the Saudi citizen, the most prominent of which are: Basic skills, which include basic skills for equipment and tools (using the keyboard and operating touch screen technology), software (word processing, managing files on computers, privacy settings on mobile phones) and basic online operations (using E-mail, search or online form filling. Intermediate skills: Such as desktop publishing skills, digital graphic design, and digital marketing. Advanced skills: Skills needed by professionals in information and communication technology professions such as computer programming and network management.

One of the results of the launch of the vision was the formation of the National Committee for Digital Transformation by Royal Decree (No. 49584, dated 10-29-2017). The committee has been responsible for drawing up policies and strategies related to digital transformation at the level of public agencies. (Alhazmi et al., 2022). At the end of 2017, this was followed by the establishment of the Digital Transformation Unit to be the executive arm of the committee and to lead the digital transformation in the Kingdom of Saudi Arabia.

3. Methodology

The current study was conducted using the survey method to collect information about the awareness of users of social networking programs of the following elements of digital citizenship: Digital access, digital commerce, digital communications, digital ethics, digital literacy, digital law, digital security, digital health, digital welfare, and digital rights and responsibilities.

The survey was applied to 270 males and 130 females, with a total of 400 respondents, in Hail, Saudi Arabia. The survey consisted of 59 questions to include the nine elements; So that each element has a fixed number of pointers. A 3-point scale was used for each indicator where 1 indicates 'not aware,' 2 indicates 'somehow aware' and 3 indicates 'aware.' The demographic factors of the respondents to the survey are shown in Table 1.

4. Results and discussion

4.1. The axis of self-respect/respect

4.1.1. Digital ethics and standards of behavior (decency)

Table 2 presents the awareness of the group of respondents regarding digital behavior standards. Based on the results collected, the male group had an average score of 2.80 which was described as (aware), while females, on the other hand, got an

average score of 2.15, which is described as (somehow aware). Looking deeper into the data, the

male group was very familiar with how to respect others online.

Table 1: Demographic factors of the respondents

Variables	The details	Repeations	Percentage
Sex	Male	270	67.5
	female	130	32.5
Age	15-25	244	61
	25-35	156	39
Education	secondary	441	36
	Bachelor's	201	50.25
	Postgraduate	55	13.75

Table 2: Standards of digital behavior

Female responses			Male responses			Sentence number
Degree of approval	standard deviation	Average	Degree of approval	standard deviation	Average	
Somehow aware	0.31	2.47	aware	0.51	3.43	1
Somehow aware	0.11	1.43	Somehow aware	0.32	2.56	2
Somehow aware	0.17	2.22	aware	0.37	2.95	3
Somehow aware	0.15	2.02	Somehow aware	0.29	2.33	4
Aware	0.31	2.63	aware	0.26	2.98	5
Somehow aware	0.07	2.11	Somehow aware	0.30	2.39	6
Somehow aware	0.21	2.19	aware	0.47	2.99	7
Somehow aware	0.22	2.15	aware	0.34	2.80	

This means that the male group engages in responsible behavior online, either in face-to-face or digital interaction. However, the female group was moderately aware of electronic standards, acceptable use policies, and rules and procedures for using the online technological tool. The results also indicate that almost all of the male and female respondents know the “guiding principles of digital behavior.”

But you should also provide support and help to practice good manners, even on the web. They should also be told to respect and value each other instead of spreading bad news on the web or sending malicious emails. Neglecting doing so may encourage mistreatment or even expose others to cyberbullying.

Al-Thubetat et al. (2023) confirmed that encouraging morality online attracts people all the time and takes advantage of real circumstances in multiple encounters. This requires the continuous technical development of individuals to become responsible digital citizens.

On the other hand, the male and female groups were moderately aware of how to respect others online (Alotaibi and Campbell, 2022) indicating that

when individuals use technologies inappropriately, they think this is how they should act.

This may lead to more inappropriate behavior. On the other hand, this indicates that some individuals were not prepared for ethical engagement online. This leads us to conclude that it may be unethical behavior is not limited to its practice on the Internet only, hence there is a need to at least understand ethical behaviors while being active online.

In general, the respondents were moderately aware of digital ethics and know when and how to use it. Thus, training and activities must be offered to reinforce those manners. To be responsible digital citizens.

4.1.2. Digital access

Table 3 presents the awareness of the respondents regarding digital access. Based on the data, the male group scored an average of 2.14 while the female group scored an average of 1.95. Which described both of them as somewhat conscious. It is assumed that the respondents are moderately aware of the tools and methods of accessing the Internet that allow them to participate in various activities.

Table 3: Digital access practices

Female responses			Male responses			Sentence number
Degree of approval	standard deviation	Average	Degree of approval	standard deviation	Average	
Somehow aware	0.31	2.33	Somehow aware	0.27	2.41	1
Somehow aware	0.31	2.31	Somehow aware	0.22	2.37	2
Somehow aware	0.22	2.19	Somehow aware	0.15	2.09	3
unaware	0.04	0.86	unaware	0.07	0.97	4
Somehow aware	0.29	2.34	Somehow aware	0.20	2.11	5
Somehow aware	0.22	2.21	Somehow aware	0.22	2.39	6
Somehow aware	0.09	1.41	Somehow aware	0.13	1.99	7
Somehow aware	0.12	1.95	Somehow aware	0.15	2.04	

Moreover, they are moderately knowledgeable about various online search engines, however, the group of female respondents was less

knowledgeable in evaluating the credibility of the information they dealt with. This means that they are not fully aware that not all information available

on the Internet is reliable, yet they cannot say which one is reliable. Thus, they are at risk in dealing with information online. Hence, they need to be careful and aware of online fraud information.

According to [Almomani et al. \(2021\)](#), individuals should have the amount of knowledge that enables them to know right from wrong regarding information so as not to fall prey to hackers and crackers. Conversely, female respondents exhibited a moderate degree of familiarity with various search engines and community resources for acquiring information through internet access. However, they demonstrated a lack of awareness concerning the evaluation of information's validity and credibility using specific criteria. Of particular note is the valuable feedback provided by the respondents when sharing their concerns. Addressing these concerns necessitates the implementation of awareness-building measures and preventative strategies to mitigate potential risks. These measures should extend across various contexts, including educational institutions, community clubs,

and home environments, encompassing training programs and workshops designed to enhance their discernment and error-avoidance capabilities.

Moreover, it is imperative for the management of educational institutions, whether schools or universities, as well as workplaces and homes, to maintain vigilance regarding the potential risks introduced by technology. This vigilance should extend to safeguarding against adverse consequences in the school, university, or workplace environment stemming from the use of technology.

4.1.3. Digital laws

[Table 4](#) presents the awareness of the group of respondents with the digital law. Based on the collected results, the male group obtained an average of 2.44. On the other hand, females scored an average of 2.11, and both were described as somehow aware.

Table 4: The practices of digital laws

Female responses			Male responses			Sentence number
Degree of approval	standard deviation	Average	Degree of approval	Standard deviation	Average	
Somehow aware	0.26	2.22	aware	0.37	2.95	1
Aware	0.35	2.71	aware	0.37	2.93	2
Somehow aware	0.16	1.45	Somehow aware	0.16	1.53	3
Somehow aware	0.17	2.01	Somehow aware	0.26	2.33	4
Somehow aware	0.25	2.19	Somehow aware	0.030	2.43	5
Somehow aware	0.21	2.12	Somehow aware	0.30	2.46	6
Somehow aware	0.21	2.11	Somehow aware	0.30	2.44	

This requires that both groups should have a moderate knowledge of what is legal and acceptable in the digital age. Moreover, although both groups were aware that individuals could bear the responsibility for misusing digital tools, they were still not fully aware of the laws regarding technology use and its consequences.

Thus, there is a need to renew their awareness of the legal consequences and rights that govern the use of technology. [Emejulu and McGregor \(2019\)](#) and [Alhazmi et al. \(2022\)](#) indicated that it is logical that there are people who do not care no longer follow the values of society and do not engage in activities that conflict with its beliefs.

In this context, the digital society is not very different. As such, legal penalties are applied to individuals who violate laws and act as inappropriate digital natives such as stealing other people's information, creating and releasing viruses, etc. While drafting new laws, the views of digital citizens must be taken into consideration to determine how to deal with these practices when they occur.

If the members of the digital community are not involved in the development of these laws, then the laws will not reflect a correct understanding of the digital society. [Ghamrawi \(2018\)](#) and [Suson \(2019\)](#) suggested that educational institutions such as schools and universities should consider holding training courses on computerized citizenship. To

develop students' skills and introduce them to digital laws and how to respect and work with them. Hence, it may be suggested to teach a specific course related to digital citizenship, such as digital laws, to increase students' understanding of their rights and duties as digital citizens.

4.2. Self-education/communication

4.2.1. Digital communications

Based on the collected results ([Table 5](#)), the male group obtained an average score of 2.65 which is described as 'aware.' While females, on the other hand, got an average score of 2.08, which is described as 'somehow aware.'

Moreover, the results revealed that the male group was fully aware of the elements of digital communication such as respect for others, and politeness in dealing with issues of digital communication. While the female group was somehow aware. [Al-Thubetat et al. \(2023\)](#) stressed in their study that when you use social media effectively, you want to see yourself as a respected digital citizen, not just an ordinary digital native.

This transformation necessitates individuals to engage in self-reflection regarding their values and ethics, discerning the distinction between right and wrong, recognizing their limitations, learning from failures, and embracing calculated risks.

Table 5: Digital communications practices

Female responses			Male responses			Sentence number
Degree of approval	Standard deviation	Average	Degree of approval	Standard deviation	Average	
Somehow aware	0.21	2.11	Somehow aware	0.28	2.33	1
Somehow aware	0.20	2.02	Aware	0.41	2.98	2
Unaware	0.12	1.11	Somehow aware	0.21	1.53	3
Somehow aware	0.28	2.34	Aware	0.37	2.97	4
Somehow aware	0.31	2.56	Aware	0.36	2.93	5
Somehow aware	0.27	2.24	Aware	0.39	2.98	6
Somehow aware	0.24	2.09	Aware	0.32	2.66	7
Somehow aware	0.25	2.21	Somehow aware	0.30	2.43	8
Somehow aware	0.24	2.08	Aware	0.35	2.60	

As individuals, we possess the agency to shape our lives using the diverse communication channels available to us. These channels afford opportunities to experiment with novel approaches and tools for learning, critical thinking, and engaging with a diverse range of individuals. This active participation in digital activities is contingent upon our comprehension of the advantages and potential of these communication tools.

The study's findings reveal that both male and female respondents extensively utilize digital tools, yet they exhibit limited awareness of the multifaceted benefits of these tools. The female group, in particular, displayed a modest level of awareness regarding the utility of digital tools for communication and information exchange. However, this awareness does not necessarily translate into possessing appropriate ethical standards for communication, rendering them susceptible to encountering difficulties and making errors (Mahadir et al., 2021). This underscores the role of digital access as a catalyst for enhancing individual digital citizenship. Consequently, there arises a need

to enhance internet accessibility and provide training initiatives aimed at bolstering digital ethics within society.

Furthermore, the respondents' feedback indicates that the deluge of rapid information does not equip them adequately to respond effectively. This underscores the importance of introducing individuals to strategies for managing, preserving, organizing, and discerning the relevance of information amidst this information overload. Educational institutions have a pivotal role in training individuals in these techniques and facilitating their application in both academic and practical contexts.

4.2.2. Digital literacy

Table 6 presents the awareness of the group of respondents about digital literacy. Based on the data collected, the male group scored an average of 2.27 while the females scored an average of 1.83 and both can be described as somehow aware.

Table 6: Digital literacy practices

Female responses			Male responses			Sentence number
Degree of approval	Standard deviation	Average	Degree of approval	Standard deviation	Average	
Somehow aware	0.27	2.03	Aware	0.47	2.64	1
Somehow aware	0.28	2.11	Somehow aware	0.27	2.03	2
unaware	0.09	0.88	Somehow aware	0.28	2.11	3
Somehow aware	0.26	2.01	Somehow aware	0.31	2.32	4
Somehow aware	0.27	2.09	Somehow aware	0.28	2.12	5
Somehow aware	0.19	1.88	Somehow aware	0.46	2.43	6
Somehow aware	0.19	1.83	Somehow aware	0.30	2.27	

This necessitates the adoption of innovative educational methodologies and habitual practices that instill values associated with digital literacy in individuals. Digital citizenship literacy encompasses knowledge and attitudes concerning the prudent utilization of digital technology.

As demonstrated in Mahadir et al.'s (2021) study, the establishment of an effective digital environment hinges upon harnessing the ICT skills of digital citizens, guided by ethical principles, legal considerations, security protocols, accountability, and suitable methodologies.

The male group exhibits moderate proficiency in using digital technology, yet they lack the competence to verify content accuracy, navigate, and assess information critically. Conversely, the female

group displays a limited understanding of digital technology utilization.

While they possess a moderate awareness of fundamental digital components such as browsers, search engines, and email, they remain unfamiliar with conventions surrounding file naming. For instance, as highlighted by Ben Ltaifa and Derbali (2022), one of the pivotal aspects of technology is comprehending its mechanics to maximize its utility. Despite the consensus on its importance, this aspect is often overlooked.

Today, educational institutions, including universities, schools, clubs, and even households, are equipped with more advanced technology than ever before. Consequently, it becomes imperative for users to grasp how technological tools, such as

laptops and smartphones, integrate into their lives and enable effective management of their affairs.

This implies that both male and female groups have not been introduced to the positive and negative repercussions of failing to critically assess online information. Consequently, they require guidance and exposure to the effects and consequences of digital citizenship when utilizing digital tools.

4.2.3. Digital commerce

Table 7 presents the awareness of the group of respondents about digital commerce practices. Based on the collected results, the group of male respondents had an average score of 2.78 which was described as 'aware.' While the group of female respondents got an average score of 1.75, which is described as 'somehow aware.'

Table 7: The practices of digital commerce

Female responses			Male responses			Sentence number
Degree of approval	Standard deviation	Average	Degree of approval	Standard deviation	Average	
Somehow aware	0.25	1.95	aware	0.41	2.98	1
Somehow aware	0.22	1.71	aware	0.37	2.76	2
Somehow aware	0.25	1.95	Somehow aware	0.29	2.51	3
Somehow aware	0.26	2.01	aware	0.34	2.66	4
unaware	0.19	1.19	Somehow aware	0.27	2.44	5
Somehow aware	0.26	1.72	aware	0.41	2.99	6
Somehow aware	0.26	1.77	aware	0.41	2.99	7
Somehow aware	0.25	1.75	aware	0.38	2.76	

The data revealed that the male group was fully aware of the dangers related to the online purchase process. Without being cautious about the risk of buying from suspicious websites; which exposes them to the theft of their personal data and online scams. This means that the male group was at risk when engaging in online commerce. Thus, this requires them to verify the purchase sites and their legality.

Moreover, the female group was moderately familiar with the process of buying and selling electronic goods. This may expose them to great danger when dealing with buying and selling sites as a result of their lack of awareness of the problems that they could fall into.

This requires them to seek help and advice from more experienced individuals to ensure a secure e-commerce. According to [Almomani et al. \(2021\)](#), digital commerce and its ethics on the web is the most difficult component of digital citizenship for individuals.

Male respondents may feel that it is not their duty to educate their peers to be aware of online buying and selling. However, online purchasing has

emerged as a vital component of their life so they need to understand all the values and ethics of these online operations.

Digital commerce may not seem like an issue of particular concern to some of the male and female respondents, but it is very important to others. Anyone who buys or sells things online is an active member of the digital community. And he must interact in the digital economy by emphasizing awareness of e-commerce and its modeling on individuals to promote a responsible digital citizen.

4.3. Self-protection/protecting

4.3.1. Digital rights and responsibilities

Table 8 presents the awareness of the group of respondents with digital rights and responsibilities. Based on the collected results, the male group got an average of 2.50, and the female group got an average of 1.89. This can be described as both being aware to some extent.

Table 8: The practices of digital rights and responsibilities

Female responses			Male responses			Sentence number
Degree of approval	Standard deviation	Average	Degree of approval	Standard deviation	Average	
Somehow aware	0.26	2.11	Aware	0.33	2.78	1
Aware	0.32	2.71	Aware	0.35	2.95	2
Somehow aware	0.15	1.44	Somehow aware	0.25	2.13	3
Somehow aware	0.17	1.76	Somehow aware	0.31	2.53	4
Somehow aware	0.15	1.43	Somehow aware	0.28	2.22	5
Somehow aware	0.19	1.87	Somehow aware	0.29	2.44	6
Somehow aware	0.19	1.88	Somehow aware	0.30	2.50	

The data revealed that the male group was fully aware of the digital rights and responsibilities that each user should follow. In addition to the need to use online technology morally. This indicates that the male group represents responsible digital citizens with regard to their rights and responsibilities in the digital field. According to

[Ahmad et al. \(2022\)](#) and [Al-Thubetat et al. \(2023\)](#), one of the critical steps in upholding the digital rights and responsibilities of individuals is their awareness of values and positive practices and being familiar with an acceptable online use policy.

Moreover, the female group was moderately aware of the digital rights and responsibilities that

should be followed by each user, In addition to the need to use online technology in a moral way. Also, the female group was not fully aware of how to be effective online and become responsible citizens. This indicates that the female group members are still beginners in terms of their rights as digital citizens.

Hence, this entails raising the female group's awareness of their rights and responsibilities as digital users, as well as addressing their concerns and helping them decide how to be responsible digital citizens.

We affirm that digital rights and duties in this digital world will be the responsibility of everyone, however, without awareness of values and ethics or

in other words what to do and what not to do that would affect our roles in this world. Therefore, it is necessary to promote digital citizenship in all institutions of society.

4.3.2. Digital security (self-protection)

Table 9 presents the awareness of the group of respondents with digital security practices. Based on the collected results, the male group got an average of 1.97. While the female group got an average of 2.08, this can be described as both being somehow aware.

Table 9: Digital security practices

Female responses			Male responses			Sentence number
Degree of approval	Standard deviation	Average	Degree of approval	Standard deviation	Average	
Somehow aware	0.29	2.56	Somehow aware	0.20	2.12	1
Somehow aware	0.31	2.71	Somehow aware	0.20	2.04	2
Somehow aware	0.21	1.35	Somehow aware	0.23	2.15	3
Unaware	0.19	1.23	unaware	0.16	1.33	4
Somehow aware	0.23	2.22	Somehow aware	0.21	2.14	5
Somehow aware	0.28	2.46	Somehow aware	0.21	2.06	6
Somehow aware	0.26	2.08	Somehow aware	0.19	1.97	

This result indicates that the respondents are not sufficiently aware of the security issues involved in dealing with digital spaces. However, digital security problems can be reduced, as confirmed by [Veugeliers \(2021\)](#) by using anti-virus software, anti-spyware software, updating operating systems, and others.

The respondents' responses also indicated that they do not participate in activities to raise their awareness among their friends who use ICT, due to their lack of awareness of digital security practices.

However, digital security practices include protecting themselves, their equipment, and even others from any influences that may cause harm. This indicates that the respondents were exposed to fraudulent and fake news online which is a risk to them and therefore, immediate action should be taken regarding this matter.

The responses indicate that the respondents were moderately aware of how to protect their digital tools, however, they were very insecure about their personal safety when engaging in online activities. Therefore, as emphasized by [Ebrahim and Seo \(2019\)](#) they must be alert and aware of how to be safe and responsible digital citizens. They must also

be responsible for their actions when using digital tools.

Despite the respondents' moderate level of awareness concerning the components of digital citizenship, they remained susceptible to security-related risks. Addressing this vulnerability necessitates a proactive approach involving heightened awareness through training programs, workshops, seminars, and conferences. Additionally, the creation of comprehensive digital citizenship guides and their widespread distribution is recommended to mitigate these risks effectively.

4.3.3. Digital health and safety

Table 10 presents the awareness of the group of respondents about digital health and safety. Based on the collected results, the male group had an average score of 2 while the female group had an average score of 1.82 which both were described as somehow aware. This requires that groups of respondents be responsible for the precautions they must take to ensure their own personal safety and security.

Table 10: Digital health and safety practices

Female responses			Male responses			Sentence number
Degree of approval	Standard deviation	Average	Degree of approval	Standard deviation	Average	
Somehow aware	0.30	2.23	Somehow aware	0.35	2.21	1
Somehow aware	0.34	2.43	Aware	0.37	2.77	2
Somehow aware	0.21	1.65	Somehow aware	0.35	2.21	3
unaware	0.17	1.21	Unaware	0.17	1.21	4
Somehow aware	0.34	2.22	Somehow aware	0.35	2.22	5
unaware	0.17	1.22	Somehow aware	0.36	1.43	6
Somehow aware	0.28	1.82	Somehow aware	0.30	2.00	

The findings of this study reveal that both the male and female cohorts demonstrated a moderate

level of awareness concerning the functioning of contemporary software updates designed for virus

protection. However, there persists a notable deficiency in their awareness regarding online scams and fraudulent sources, rendering them susceptible to risks associated with the secure utilization of digital tools. Remedial measures, such as guidance and training, are imperative to cultivate prudent practices.

Additionally, the study's responses underscore the insufficient familiarity of both male and female participants in discerning websites or emails that may serve as conduits for fraudulent activities, as elucidated by Orth and Chen (2013). It is crucial to emphasize that safeguarding personal devices and digital resources extends beyond an individual's purview; it holds broader societal implications. For instance, the conscientious installation of protective software not only fortifies personal data but also impedes the transmission of viruses from one's device to others. While the respondents exhibit a moderate level of awareness regarding digital safety and security protocols, this should not be misconstrued as an assurance of their capability to ensure personal safety and security when engaging with digital technology.

5. Conclusions

The study reveals that the progress of digital citizenship within the Kingdom of Saudi Arabia faces impediments primarily rooted in the issue of inappropriate technology utilization. Key pillars of digital citizenship in Saudi Arabia encompass digital literacy, digital ethics, digital access, and digital participation. Findings indicate that both male and female respondents possess a moderate level of awareness regarding the constituents of digital citizenship. Moreover, male respondents exhibit a more comprehensive understanding of digital behavior standards, digital communication, and electronic commerce compared to their female counterparts, who display a moderate level of awareness in these domains. The research outcomes also illuminate a deficiency in respondents' knowledge concerning technology-related laws, outcomes, and legally acceptable conduct. Furthermore, the data underscores a notable lack of awareness regarding digital legislation. While respondents have access to digital tools, they do not possess a comprehensive grasp of responsible behavior standards, particularly among female respondents. Additionally, the research underscores a prevailing dearth of guidance for respondents in cultivating responsible digital citizenship, both within and beyond the confines of educational institutions.

6. Recommendations

The study offers several recommendations:

1. **Implementation of Training Programs and Seminars:** It is advisable to design and conduct training courses and seminars focused on digital

citizenship, equipping individuals with the knowledge and skills required to be responsible digital citizens. Additionally, the creation of informative brochures outlining responsible citizenship in the digital age is encouraged. Furthermore, organizing activities and simulations that promote appropriate and responsible digital technology usage is recommended.

2. **Dissemination of Digital Citizenship Material:** To raise awareness and educate individuals, digital citizenship materials should be printed and prominently displayed throughout educational institutions, including schools, universities, and clubs. These materials should serve as a constant reminder of the principles of responsible digital behavior.
3. **Integration into Educational Curricula:** To ensure a comprehensive understanding and incorporation of digital citizenship principles, it is essential to integrate various aspects of social media usage into the curricula of schools and universities. Lecturers and teachers should actively employ social media within their classrooms and incorporate it into various educational activities and practical assignments.
4. **Interdisciplinary Research Expansion:** This study proposes the expansion of digital citizenship research into diverse academic disciplines, including education, law, engineering, medicine, management, computer science, economics, and psychology. This interdisciplinary approach can lead to a more comprehensive understanding of digital citizenship and its multifaceted impact across various domains.

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Compliance with ethical standards

Conflict of interest

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