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Digital Citizenship, Self-Esteem and Life Satisfaction: An Assessment of the Geographical Differentials and Demographic Factors in the Kingdom of Saudi Arabia

المواطنة الرقمية وتقدير الذات والرضا عن الحياة: تقييم للفروق الجغرافية والديموغرافية بالمملكة العربية السعودية

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المستخلص

إن العيش في عصر العولمة الجديدة ممثلًا في تكنولوجيا المعلومات والاتصالات في تزايد في كل مكان. وينعكس هذا التقدم في تكنولوجيا الاتصالات بنتائجه على حياة الشخص بشكل مؤثر على نفسية المستخدمين المحتملين، وقد يؤدي إلى العديد من المخاوف النفسية. وقد تناولت هذه الدراسة تأثير المواطنة الرقمية وتأثيرات الحياة الرقمية على تقدير الذات والدور المحتمل للرضا عن الحياة كمتغير وسيط. وقد صمم البحث كدراسة مقارنة بأسلوب سحب العينة غير الاحتمالية التي بلغ عددها 2597 من طلبة الجامعات والمرحلة الثانوية السعوديين بالتعليم الحكومي. كما تم جمع بيانات البحث باستبانات بحثية لتقييم مفهوم الأفراد عن المواطنة الرقمية؛ باستخدام استبانة المواطنة الرقمية التي طورها نوردين وآخرون عام 2016، ومقياس تقدير الذات لويبستر 2020، ومقياس الرضا عن الحياة لدينر 1985.

ولوحظ وجود علاقات ارتباطية بين أبعاد المواطنة الرقمية وتقدير الذات

الكلمات المفتاحية: الدراسات الأمنية، المملكة العربية السعودية، المواطنة الرقمية، الرضا عن الحياة، تقدير الذات، نظم المعلومات الجغرافية.

Abstract

Living in the new era of globalization has been enhanced by ubiquitous information and communication technologies. These advancements in communication technology introduce many consequences in a person's life and impact the psychology of potential users and may lead to many psychological concerns. This study examines the impact of digital citizenship and considered the effects of digital life on self-esteem and the potential mediating role of life satisfaction. The cross-sectional research design uses a purposive non-probability sampling technique with a population of 2597 Saudis with formal education. Data were collected via multiple research questionnaires: to assess individuals 'concept of digital citizenship, the Digital Citizenship Questionnaire developed by Nordin et al. (2016); to measure self-esteem, Webster et al. (2020) state self-esteem scale; and to measure life satisfaction, the Satisfaction with Life Scale developed by Diener et al. (1985).

It has been observed significant associations fall the di-

Keywords: *Security Studies, Saudi Arabia, Digital Citizenship, Life Satisfaction, Self-esteem, Geographic Information System.*

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mensions of digital citizenship with self-esteem and life satisfaction, while life satisfaction played a significant mediation role between digital citizenship and self-esteem. Findings of the results address useful insights about the digital citizenship construct and its relationship with psychological attributes of self-esteem and life satisfaction. The results will significantly contribute to the field of digital marketing, and digital network-based organizations and enhances the knowledge about digital citizenship along with the responsibilities and ethical use of digital technology in the respective firms.

والرضا عن الحياة، وقد كان للرضا عن الحياة كمتغير وسيط دور مهم بين كل من المواطنة الرقمية وتقدير الذات.

واستخلصت الدراسة نتائج ورؤى مفيدة حول المواطنة الرقمية وعلاقتها بالسمات النفسية لتقدير الذات والرضا عن الحياة، سوف تسهم بشكل كبير في التسويق الرقمي والمؤسسات القائمة على الشبكات الرقمية، وتعزيز المواطنة الرقمية، إلى جانب المسؤوليات والاستخدام الأخلاقي للتكنولوجيا الرقمية في المؤسسات المعنية.

1. Introduction

Life in the information age is becoming increasingly digitally mediated. The adoption of good digital citizenship helps to avoid the hazards associated with the use of information and communication technologies (ICTs) while still reaping their benefits.

Digital Citizenship

The term digital citizenship refers to an ethos and behaviors for the appropriate and responsible use of computers, the internet, and other information and communication technologies. It comprises "being able to find, access, use and create information effectively; engage with other users and with content in an active, critical, sensitive and ethical manner; and navigate the online and ICT environment safely and responsibly, while being aware of one's rights" (UNESCO, 2016). The concept revolves around promoting socially responsible citizenship in the online universe, where human lives are digitally intertwined and one's actions and behaviors have consequences for oneself and others and all should be made to feel safe and protected.

According to Ribble (2015), digital citizenship (DC)encompasses nine elements, and among them are digital etiquette, digital commerce, digital rights and responsibilities, digital health and wellness, and digital safety and security, which all intersect with one another (Nordin et al., 2016), underscoring their significance in building appropriate and responsible digital citizenship.

Digital Citizenship in Islamic Countries

In recent decades, internet penetration has risen substantially throughout the world. Globally, the proportion of people using the internet has risen dramatically from 26.6% in 2009 to 56.5% in 2019. Astonishingly, the internet penetration rate in widely Islamic Middle East regions is higher (28.8% in 2009 to 67.2% in 2019) than the global average (Statista Research Department, 2020). Despite this increased usage rate, the proliferation of cell phones, and expanding internet culture, inequalities in Islam-majority nations remain severe (Raz, 2020). In Islamic countries, the digital gap is a big issue and studies have highlighted the scarcity of online awareness and safety training options (Alavijeh& Abdollahi, 2020; Sinclair-Jones, 2018). Developing local models of digital citizenship that suit the respective Islamic nation's cultural, religious, and economic norms, such as the Muslim Digital Citizen's Guide (Faith-Associates, 2019), is a beneficial approach to responsibly and safely taking advantage of the digital revolution.

Kingdom of Saudi Arabia and Fast-Paced Digital Transformation

Saudi Arabia is progressing in its digital transformation along with other global economies, as evidenced by its jump from 39 thto 34 thplace in the digital competitiveness rankings from 2019 to 2020 (IMD, 2020). One of the goals of the Saudi National Transformation Program is the digital transformation of the nation (Kingdom of Saudi Arabia, 2016). The program has established a digital economy policy to attract investment and diversify its economy, to increase non-oil exports from 16% to 50%. Access to digital infrastructure, services, and data, technology adoption, and use, innovation, human capital, social prosperity and inclusion, trust in the digital ecosystem, and market openness are all central to its digital economy policy (Ministry of Communications and Information Technology, 2020).

As the Kingdom of Saudi Arabia promotes digital culture and equal educational opportunities for all, the importance of digital citizenship becomes clearer, to ensureeffective and productive participation of all members and segments of society, including people in rural areas, individuals of all ages, women in the workforce, and people with disabilities. The Saudi Arabian government is trying to construct legislative and policy frameworks, as well as projects and initiatives, to ensure the best possible use of all kinds of information and communications technology in community development. The National Communications and Information Technology Plan (NCITP) is another government-led initiative aiming at hastening the digitalization of the Saudi society (Ministry of Communications and Information Technology, 2013). It also establishes an Anti-Cyber framework for safeguarding the general good, morals, and ethics, as well as data security and rights stemming from lawful usage of computing and networking technologies and the associated economics (Kingdom of Saudi Arabia, 2009).

Kingdom of Saudi Arabian Digital Citizenship

Saudi Arabia is an Arab nation, an Islamic state with rigid standards and beliefs, despite attempting to stimulate the use of technology as well as the advancement of virtual technologies and digital citizenship. It was previously assumed that the subject of digital citizenship would pose a threat to Saudi Arabia's identity, which is based on cultural-religious domination, centralization, and strong conservative tendencies (Al-Zahrani, 2015). However, instead of being viewed as a threat to the country, the technological-cultural collision is now considered an opportunity to raise the standard of living and transmit Arabian thoughts and practices throughout the world. Given these perspectives on the technological boom, digital citizenship formation is a key issue in Saudi Arabia due to the country's reverence for its cultural legacy (Abu-Omar & Jwaifell, 2018) and the desire not to discard traditional values in favor of digital prospects (Alqahtani, 2017a).

For Saudi Arabia's younger generations, the concept of digital citizenship is relatively new (Alzahrani, 2019). Saudi Arabia's educational system has made slow progress in addressing or encouraging digital citizenship (Alqahtani, 2017b). This suggests that, to promote online attitudes and efficient use of computers, digital citizenship education should be included in its academic curricula.

Self-Esteem

Self-esteem describes a person's self-judgment regarding his/her psychological, sociological, intellectual, ethical, and physical traits, manifested

in self-confidence and positive attitudes as well as an assessment of one's values and desires to lead a happy and satisfied life related to subjective needs (Alshammari, 2021). Adolescent self-esteem is linked to interpersonal performance, which is regulated by family interactions, genetic variables, stress, social protection, self-image, behavioral issues, and academic progress (Han & Kim, 2006; Raevuori et al, 2007). It is a significant predictor of satisfaction and has consequences for a range of life aspects, including academic success, cognitive well-being, fitness, relationship quality, and work performance (Krause et al, 2021; Rentzsch, Erz, & Schütz, 2021). In particular, low self-esteem has a deleterious effect on success in life in general (Marecec, 1996). People who have poor self-esteem are often inclined to be dissatisfied, underachieve their capacity, or experience unpleasant life circumstances and partnerships (Bairagi et al, 2021). Overall, the evidence demonstrates that strong self-esteem has beneficial repercussions for an individual's well-being and achievement and that low self-esteem is a potential hazard with adverse results (Sowislo & Orth, 2013).

Life Satisfaction

A person's assessment of their subjective quality of life, which means his perception about the world, his happiness goal, and way to achieve them while keeping true to and relying on their principles and ethics is referred to as life satisfaction. Well-being, financial status, relationship status, cultural connections, education, spirituality, and nationality are all things considered by a person when judging their life satisfaction. Individuals' negative life circumstances, such as fright, tension, and depression, reduce life satisfaction, whereas favorable life events, social support, healthy relationships, and cognitive competence boost life satisfaction (Gundogan, 2021). In general, good citizenship behavior and activity are linked to a sense of fulfillment in life (Meynhardt, Brieger, & Hermann, 2018). Life satisfaction acts a a key mediating role in increasing gratitude and reducing substance use, violence, sexual risk-taking, materialism, loneliness, depression, anxiety, and stress over time (Hanniball et al., 2021; Hartstone& Medvedev, 2021; Lambert et al., 2009; Liu et al., 2021).

Influence of DC on Self-Esteem and Life Satisfaction

Lack of digital citizenship awareness can and has resulted in unwanted, perhaps harmful community behavior (Hollands's worth, Dowdy, & Donovan, 2011). Cyber victimization, for example, was found to predict poor outcomes concerning symptoms of stress, panic, low self-esteem, poor grades, and increased suicide risk among children and teenagers than classical victimhood (Giumetti& Kowalski, 2016; van Geel, Vedder, &Tanilon, 2014). More crucially, psychological expressions such as self-esteem and life satisfaction are influenced significantly by social media usages, such as activity on Facebook, Twitter, and Instagram (Rutledge, Gillmor, & Gillen, 2013). Consuming excessive social media content can help those with low self-esteem and low life satisfaction since it allows them to express themselves and build social capital (Forest & Wood, 2012; Wilcox & Stephen, 2013). On the other hand, consuming a large amount of time online has been linked with a lack of self-worth (Kalpidou, Costin, & Morris, 2011). These disparities necessitate more research connecting psychological factors, particularly self-esteem, to digital access.

Digital technology provides more possibilities

and resources to promote these elements, hence affecting life satisfaction, perhaps positively, perhaps either positively, or negatively. People rely on digital technology to purchase essential products, form connections with others, participate in education, and work from home, which has become significant during the COVID-19 pandemic(Sanders & Scanlon, 2021). However, there is a split (known as the "digital divide") between those who have and those who do not have access to digital technology, which limits this influence. The digital gap exists on several levels, including limited internet access due to rural and remote locations, low broadband adoption due to low-income levels, and lack of knowledge due to inadequate education. Internet adoption and digital activity can be significant avenues for boosting life satisfaction among senior adults and adversely affected social groups, such as those from lower socioeconomic strata and those with health issues that interfere with daily functioning (Lissitsa & Chachashvili-Bolotin, 2016). Further, the higher one's degree of life satisfaction is, the less likely one is to cyberbully others or to be cyberbullied themselves, highlighting the behavior of good digital citizenship (Zhu et al., 2016; Zhong et al., 2021). Hence, digital citizenship and life satisfaction appear to have a bidirectional relationship.

As a result, the impact of digital citizenship and use on individual self-esteem, as well as life satisfaction in general, must be thoroughly examined, as this study aimed to accomplish. Furthermore, we were unable to locate any research that has investigated the function of life satisfaction in mediating the impact of digital citizenship on self-esteem. The current research also addresses this association.

2. Literature Review

Over time, the plethora of studies on DC has expanded. This scenario might be interpreted as evidence of the progressive importance of DC as a necessary component of future life. Chen et al. (2021) provided an integrated analysis of DC conceptualizations and measurements in several disciplines. They found that the discussion of the topic of digital citizenship is rapidly expanding as scholars, governments, and academics have become involved and sensitive regarding the construct. Their research revealed a gap in DC studies that do not explicitly account for age or other relevant considerations while testing tools for use at various phases of the lifespan and in various settings.

Basic characteristics of traditional – that is, non-digital – citizenship include civil, political, and social rights and obligations (Choi, 2016). Similarly, Ribble's (2015) DC has presented a framework of nine core characteristics that had three broader guiding principles that can be intrinsic to traditional citizenship. These principles (with respective digital elements) are respect (digital access, digital etiquette, and digital law), education (digital communication, digital literacy, and digital commerce), and protection (digital rights and responsibilities, digital safety and security, and digital health and wellness). Kumar and Raj (2020) described digital etiquette as a proactive awareness of interacting in a way that is acceptable in the digital environment (Kumar & Raj, 2020). Digital commerce refers to the purchasing and marketing of products and services via commercial websites on the internet. Description of digital rights as the legal ability to acquire, utilize, generate, and disseminate online resources through digital devices and in digital networks. Nordin et al. (2016) defined digital safety and se-

curity as the emotional and physical well-being of individuals as well as the procedures for ensuring electronic security; this requires a set of attitudes, skills, beliefs, and information that make users of digital technology more aware of concerns such as ergonomics and posture, protecting oneself against theft of personal information, anti-virus protection, and can also include issues such as excessive or even addictive use of digital and mobile devices are relevantly threatening to health and well-being in the digital age.

Studies on DC in Islamic nations have primarily focused on identifying overall DC levels as well as specific aspects of DC among students (Al-Abdullatif & Gameil, 2020; Alqahtani, 2017a,2017b; Al-Zahrani, 2015; Isman & Gungoren, 2014; Nordin et al, 2016; Yildiz, Çengel, & Alkan, 2020). The nine elements of Ribble's (2015) framework were employed by Isman and Gungoren (2014), who found Ribble's Digital citizenship scale 2011, proven to be the best and most beneficial in determining the degrees of DC among Turkish higher education students. In comprehensively evaluating Saudi Arabian students' digital citizenship behaviors while using new technology, Nordin et al. (2016) vindicated the use of only five of Ribble's factors (digital etiquette, digital commerce, digital responsibility, digital safety, and security). According to the findings of Al-Zahrani's (2015) study, pupils had higher levels of confidence in their ability to utilize computers and technology, which resulted in higher levels of DC. These levels were attributed to their technical skill and experience in areas such as computer familiarity and average daily digital utilization. Al-Abdullatif and Gameil (2020) made contradictory findings, claiming that a significant proportion of university undergraduates lack adequate knowledge of the notion of high-quality digital citizenship and many of its facets, even though possessing prior knowledge about the usage of digital systems. According to Al-Abdullatif and Gameil (2020), effective training in dimensions and elements of this paradigm for the younger generation is recommended. In Pakistan, women confront persistent cultural barriers to digital access, as well as online threats and harassment, and reduced digital involvement among young people is due to a language barrier (Sinclair-Jones, 2018).

Alavijeh and Abdollahi (2020) came to a similar conclusion that digital citizenship enhances the new and exciting solutions to various problems in society based on their findings of low conceptualization of digital citizenship among Iranian EFL learners. Alqahtani (2017b) looked at the problem of the Saudi Arabian school system's failure to promote digital citizenship and offered solutions in a variety of contexts. The solutions included incorporating a bottom-up approach into the structural framework, incorporating technology into the recruitment and training of teachers, decentralizing power, incorporating technology in election systems, and reinforcing cultural understanding through improved web usage.

Alqahtani (2017a) was one of the rare exceptions, focusing on how demographic factors such as gender, grade taught, and experience level can influence Saudi teachers' assessments of DC awareness. It was found that male instructors stressed the importance of education and respect in DC, whereas female teachers were more concerned with the idea of digital knowledge protection. Senior school instructors were more enthusiastic than teachers in lower grades for teaching, supporting, and safeguarding students' digital rights and personalities.

This was because elementary and middle school pupils were not always interested in online services and other technologies in the manner that they should be, and hence their parents' involvement is critical in raising understanding about digital citizenship. Instructors with less than two decades of experience underlined the importance of respect and protection principles in DC, whereas teachers with more than two decades of experience emphasized the importance of education. According to the report, DC in Saudi Arabia is tightly linked to cultural, religious, and educational factors.

Yildiz, Engel, and Alkan (2020) investigated the DC level among Turkish university students about a variety of characteristics, finding substantial disparities in DC levels related to differences in gender, age groups, parental education status, and daily internet usage patterns. There was no significant distinction in DC levels across academic subjects or the residence of the students. Aside from these research results, very few have investigated the impact of demographic characteristics such as age, gender, religion, marital status, educational attainment, and socioeconomic status on DC levels in Islam-based countries.

Bairagi et al. (2021) investigated the self-esteem scores of both male and female university participants in Bangladesh and discovered no gender differences. In UAE, Shah et al. (2020) discovered an adverse connection between self-esteem and depression symptoms among adolescents aged 12 to 18. Depressive symptoms were discovered in a rather high number of teenagers in the UAE, which were ascribed to behaviors such as smoking, mental, physical, and verbal assault in the classroom, a diagnosis of illnesses that required therapeutic intervention, and reduced household income. The influence of economic determinants on life satisfaction levels among the elderly in Saudi Arabia was established by Al-Kharif et al. (2019). This study also discovered that the residential location, social and recreational time problems, charitable works, and self-assessed wellness have considerable intrinsic power in older persons' life satisfaction, with males and females having different results. Yeniaras and Akarsu (2017) studied the connection between Islam religiosity and life happiness using a Turkish sample and discovered that firmer followers are happier than those with relatively low rates of devotion.

Choi, Glassman, and Cristol (2017) looked at the link between DC and the degree of online usage and anxiety. A 26-item scale was used to assess people's sense of digital citizenship. According to the study, internet self-efficacy was positively connected to DC, but internet stress was negatively related.

Given the increased interest in promoting youth digital citizenship through education, Jones, and Mitchell (2015) developed a scale to assess youth digital citizenship. They investigated the link between victimization, offensive behaviors, and spectator responses to violations of online abuse. Youth who scored better on the measure's digital tolerance sub-dimension showed decreased harassment victimhood and perpetration and were more prone to support a victim of online abuse, according to the findings. Similarly, youths who participated in greater digital engagement were less likely to report mistreatment and displayed an increased inclination to assist others.

The above studies underscore the importance of instilling DC capabilities in students as soon as possible in elementary school rather than providing

limited digital literacy education in high schools to protect students from the dangers of digital environments and empower them to use digital technology positively.

According to this literature evaluation, there is no prior research on the relationship between DC and self-esteem mediated by life satisfaction. The present study explores not only the influence of digital citizenship on self-esteem in adult populations but also the likely mediating effect of life satisfaction in this interaction.

Research Aims

In Saudi Arabia, with the goal of national transformation and overall socio-economic growth, digitalization is the way to the expansion of diverse sectors of the community. However, even though appreciation of the ramifications of DC has been growing worldwide since 1999 (Chen et al., 2021), research and policy-level actions on DC in KSA are still in their infancy. In Saudi Arabia, as in other nations, healthy DC has the potential for positive effects on individuals, communities, and the country. In addition, the Kingdom is striving to improve satisfaction levels and self-esteem in many fields and services as a growth indicator (Kingdom of Saudi Arabia, 2016), for which digital citizenship could play a critical role. Given this context, the goal of this research is to find out more about the status of digital citizenship in Saudi Arabian adult populations, as well as its impact on self-esteem levels, while also considering the effect on life satisfaction.

Hypotheses

The objective of this research is to investigate the interaction between digital citizenship and self-esteem as mediated by life satisfaction in Saudi Arabia and to uncover predictors by evaluating the following hypotheses.

- There is a relationship between self-esteem and digital citizenship among Saudi Arabian adults
- There is a relationship between self-esteem and life satisfaction among Saudi Arabian adults
- There are significant differences between genders concerning self-esteem, digital citizenship, and life satisfaction among Saudi Arabian adults.
- Self-esteem is a mediator between life satisfaction and digital citizenship among Saudi Arabian adults.
- There are significant differences among age ranges concerning self-esteem, digital citizenship, and life satisfaction among Saudi Arabian adults.

3. Methods

3.1 Sample

The current study was completed using a cross-sectional research design among Saudi Arabian adults. Purposive random sampling was used, and data were collected from 2597 Saudi Arabian adult residents from all regions of the country, with 1904 females and 693 males. Only educated adults were selected to participate.

3.2 Instruments

Demographic Sheet

A demographical questionnaire was used to obtain information regarding the age, gender, qualifications, and residential region of the participants.

Digital Citizenship Questionnaire

The17-item Digital Citizenship Questionnaire developed by Nordin et al. (2016) was used to access the domains under the concept of digital citizenship. This scale has five domains (security, well-being, commerce, responsibility, and etiquette) with a five-point Likert scale response option for each item ranging from never to all the time.

Table 1- Demographic Statistics

n=2597	Category	*f*	%
Gender	Male	693	29.4
	Female	1904	70.6
Age Range	14-16	237	8.8
	17-19	341	12.6
	20-22	503	18.7
	23-24	450	16.7
	25 <	1066	39.5
Marital Status	Single	1639	60.8
	Married	782	29.0
	Divorced	128	4.7
	Widow	48	1.8
Education Level	Bachelor's Degree	1063	39.4
	Postgraduate	227	8.4
	Pre-University Student	551	20.4
	University Student	756	28.0
Residence Region	Aseer Region	223	8.3
	Baha Region	27	1.0
	East Region	291	10.8
	Hail Region	170	6.3
	Jazan Region	97	3.6
	Joaf Region	26	1.0
	Madina Region	155	5.7
	Makkah Region	492	18.2
	Najran Region	50	1.9
	Northern Region	144	5.3
	Qaseem Region	138	5.1
	Riyadh Region	608	22.5
	Tabuk Region	176	6.5

Self-Esteem Scale

The six-item State Self-Esteem Scale developed by Webster et al. (2020) was used. This scale uses a five-point response option for each item, ranging from strongly disagree to strongly agree.

Life Satisfaction Scale

The Satisfaction with Life Scale, a short scale with five items developed by Diener et al. (1985), was used. This scale also uses a five-point Likert response option, ranging from strongly disagree to strongly agree.

4. Results

Table 1 represents the frequencies and percentages of demographic variables obtained from the sample population. Demographic variables are categorical variables of the present research and include dichotomous and polychotomous variables. These demographics include gender, age range, marital status, education level, and residential region.

Table 2 presents the statistics and reliabilities of the research variables. These descriptive statistics include mean, standard deviation, skewness, and

Table 2 - Psychometric Properties of the Study's Major Variables/Scales(n=2597)

	k	A	M	(SD)	Skewness		Kurtosis	
					Statistic	Std. Error	Statistic	Std. Error
Life Satisfaction	05	.77	17.87	(4.11)	-.28	.04	.09	.09
Etiquette	03	.58	9.83	(2.47)	.08	.04	-.14	.09
Responsibility	04	.53	13.47	(3.54)	.05	.04	-.32	.09
Well-being/Health	03	.67	9.28	(3.18)	-.11	.04	-.40	.09
Commerce	03	.57	10.71	(2.93)	-.13	.04	-.65	.09
Security	04	.68	13.31	(3.91)	.003	.04	-.41	.09
Self-Esteem	06	.73	21.12	(6.21)	.31	.04	.08	.09

Note: k = number of items, α = Cronbach's alpha reliability, M = Mean, SD = Standard deviation.

Table 3 - Correlation of Study Variables(n=2597)

variables	1	2	3	4	5	6	7
Life Satisfaction	-	.17**	.22**	.21**	.09**	.14**	.04***
Etiquette		-	.38**	.22**	.26**	.21**	-.04*
Responsibility			-	.38**	.36**	.36**	-.09*
Well-being/Health				-	.32**	.39**	.11*
Commerce					-	.46**	-.15**
Security						-	-.52**
Self-Esteem							-

Note: p<0.05*, p<0.01**, p< 0.001***.

kurtosis. The results indicate that life satisfaction, well-being/health, and commerce were negatively skewed; etiquette, responsibility, security, and self-esteem were positively skewed; and variables were leptokurtotic. Cronbach's alpha reliabilities represent the coefficient internal consistency for the parameter.

Table 3 portrays the inter-scale correlation matrix of the research variables. Life satisfaction is significantly positively correlated to the etiquettes, responsibility, well-being/health, commerce, security, and self-esteem. Showing that a satisfying life has all the essential qualities to live. Whereas Self-esteem significantly positively correlated to life satisfaction, and well-being/health and significantly negatively to correlated etiquette, responsibility, commerce, and security. Asterisks represent the confidence intervals, which represent the chance of error in the results. A single asterisk represents the 95% confidence interval and 5% chance of error, double asterisks represent the 99% confidence interval and 1% chance of error, and triple asterisks represent a 99.9% confidence interval, and .1% chance of error.

Table 4 - Regression Coefficients(n=2597)

Variables	B	SE	T	p	95%CI
(Constant)	20.29	.53	38.19	.000	[19.25,21.33]
Etiquette	.01	.04	.28	.009	[.73, .98]
Responsibility	-.11	.03	-3.36	.001	[-.35, -.21]
Well-being/Health	.13	.03	3.77	.000	[.16, .71]
Commerce	-.27	.03	-7.06	.000	[-.35, -.21]
Security	.02	.03	.64	.003	[-.03, .07]

Table 5 - Independent Sample t-tests for Investigating Gender Difference in Internet Addiction Scale, Smartphone Addiction, Pornography Craving, Pittsburgh Sleep Quality and Physical Activity (n=2597)

Variable	Male		Female		t (2591)	P	95% CI		Cohen's d
	M	SD	M	SD			LL	UL	
Life Satisfaction	18.71	4.04	17.56	4.09	1.67	.04	.79	1.51	0.58
Etiquette	9.62	2.61	4.09	2.41	.10	.02	-1.88	2.08	0.44
Responsibility	13.38	3.89	9.94	3.41	.10	.00	-.43	.18	0.29
Well-being/ Health	9.42	3.21	2.41	3.17	.25	.03	-.07	.47	0.35
Commerce	10.45	3.08	13.51	2.91	.42	.04	-.61	-.11	0.39
Security	13.1328	3.95	13.38	3.91	.31	.00	-.59	.09	0.25
Self-Esteem	18.09	5.61	17.19	4.87	1.22	.01	.45	1.33	0.51

Note: M = mean, SD = standard deviation, CI = confidence interval. p<.01**, p<.05*.

Table 4 portrays the regression coefficients among the variables. The results indicate life satisfaction is a significant predictor of the multi-dimensional dependent research variables. The values for etiquette (B = .01, t = .28, p <0.01) for responsibility (B = -.11, t = -3.36, p < 0.01) well-being/health (B = .13, t = 3.77, p <0.01) commerce (B = -.27, t = -7.06, p < 0.01) and security (B = .02, t = .64, p < 0.01).

Table 5 showsthe independent sample t-tests across the gender variable. The results are significant across gender (p < .05, p < .01). This shows that there were gender differences across several research variables.

Table 6 represents the mediation analysis; the results indicate that self-esteem acts as a mediator between the digital citizenship subscales and life satisfaction. The R2 values indicate that 32% of relationships were observed in the criterion and predictor. After mediation, 35% of relationships were observed in the criterion and predictor, whereas ΔR2 represents that the change was observed at 23% after adding self-esteem as a mediator in the overall model.

Table 7 represents the variance among age groups of the participants across those research variables showing significant variation. Life satisfaction in the age range of 14-16 was relatively high as M=18.22 and SD= 14.36. Similarly in the same age range, the Etiquette mean score was also high. While Responsibility was high in the age range of 20-22. Whereas Well-being/Health showed high

Table 6 - Regression Analysis for Mediation (n=2597)

Variable	**B**	**95%CI**	**SE B**	**β**	**R^2**	**ΔR^2**
Step1					**.32**	**.32****
(Constant)	20.297	[21.33 ,19.25]	.53			
Etiquette	.012	[-.07, .09]	.04	.006		
Responsibility	-.111	[-.17, -.04]	.03	-.08		
Well-being/Health	.134	[.06, .21]	.03	.08		
Commerce	-.278	[-.35, -.21]	.03	-.16		
Security	.019	[-.04, .08]	.03	.02		
Step 2					.35	.23*
(Constant)	19.404	[20.61 ,18.19]	.61			
Etiquette	.002	[-.08, .09]	.04	.001		
Responsibility	-.123	[-.18, -.06]	.03	-.09		
Well-being/Health	.121	[.1, .19]	.03	.08		
Commerce	-.274	[-.36, -.19]	.03	-.16		
Security	.016	[-.04, .7]	.03	.02		
Self-Esteem	.071	[.02, .12]	.02	.06		

Note: CI = confidence interval. B = standardized beta, R^2=amount of variance, ΔR^2= change in variance. p<.01*, p<.05**.

Table 7 - Analysis of One-Way ANOVA Along with Mean, Standard Deviation, and Post-Hoc on All Study Variables (n=2597)

	14-16		17-19		20-22		23-24		F (6,2693)	η^2	Post-Hoc
	M	SD	M	SD	M	SD	M	SD			
Life Satisfaction	18.22	14.36	15.16	12.57	12.88	10.32	12.25	9.70	21.63	0.63	4<3<2<1
Etiquette	18.91	5.20	16.53	5.51	16.50	5.36	15.88	4.51	18.87	0.56	4>3<2<1
Responsibility	19.26	7.78	16.42	7.38	19.94	5.19	15.25	7.67	16.26	0.52	4<3>2<1
Well-being/Health	23.96	2.96	21.16	3.53	20.88	4.47	20.38	3.48	16.01	0.46	4<3<2<1
Commerce	18.26	09.11	11.95	16.51	17.06	12.11	19.81	4.66	11.73	0.36	4<3<2<1
Security	17.11	10.06	15.55	19.13	21.61	14.53	9.11	9.23	11.23	0.42	4<3<2<1
Self-Esteem	16.12	11.07	19.05	21.86	21.21	11.23	18.66	19.03	22.11	0.51	4<3>2>1

mean scores in the 14-16 year age group. Lastly, Self-esteem was reported high in the 20-22 year age group with M=21.21 and SD= 11.23.

Geographical Distribution Differentials of Selected Variables

Display the variance among residents of different regions of KSA for those research variables showing significant variation. The results indicate that life satisfaction was high among the residents of the Tabuk region (with a mean score, M, of 18.60) while etiquette level was high among Makkah residents (M=9.99), and both responsibility and well-being/health were high among the residents of the Joaf region (M=14.23 and M=10.42, respectively). For commerce, the Madinah and Riyadh regions participant showed higher mean scores. Security was found to be high among Baha region residents while self-esteem was high among the residents of the Qaseem region. The Joaf region and Baha regions have the highest, and nearly equal, responsibility SD values but the Tabuk and Aseer regions have the lowest responsibility SD values, as shown in Figure 1, Appendices 3 and 4.

Figure 1: Spatial Analysis based Inverse Distance Weighting (IDW) interpolation of both Security and Responsibility Mean at KSA regions.

5. Discussion

The study supports the results of the prior literature on the usage of digital technologies and the digital citizenship construct in various ways. The study offers additional evidence that digital citizenship is a multidimensional construct.

The results indicate several findings. Firstly, it describes the demographic variables. Showing frequencies and the percentages of the characteristics of research participants. Secondly, the research provides the reliabilities and the validities of the research questionnaires used in the study. Reliability represents a significant internal consistency level of each dimension of the scale. Regarding Nordin et al. (2016) Digital Citizenship Questionnaire, results from the analysis show the reliability index ranging from α = .53 (for the responsibility dimension) to α = .68 (security). Which demonstrates that the internal consistency of responses was weak. A similar pattern was observed by Isman and Gungoren (2014)

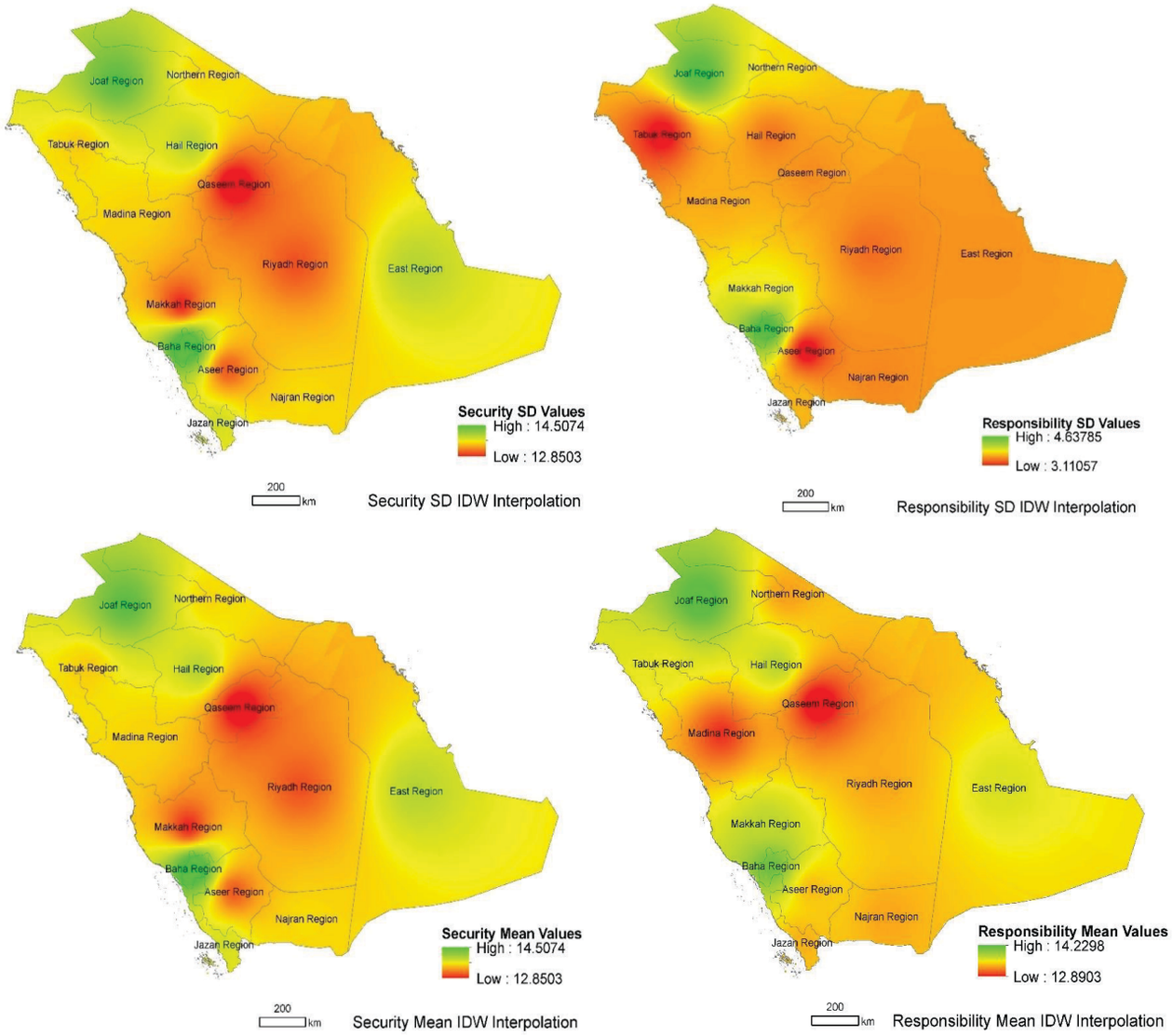

Figure 1 - Spatial Analysis based Inverse Distance Weighting (IDW) interpolation of both Security and Responsibility Mean at KSA regions.

with a sample of students. (Our research data also support the convergent and discriminant validity of the Digital Citizenship Questionnaire. The average variance extracted (AVE) of each dimension exceeded the threshold of importance and mediation inter-correlation among the sub-constructs of the questionnaire (Nordin et al., 2016). The correlation matrix indicates that the dimensions of digital citizenship are significantly related to self-esteem. About the sub-scales of digital citizenship, this study indicates that etiquette, Security (Mikulincer, 2014), responsibility, and Commerce (Cortis, 2005) are a significantly negative relationship with self-esteem. Whereas well-being/health is a significantly positive relationship with self-esteem (Marmot, 2002). Furthermore, the result indicates that self-esteem was positively correlated to life satisfaction (Agata Błachnio, 2016).

The results also explain the impact of life satisfaction across the five dimensions of digital citi-

zenship. This indicates that life satisfaction has a negative predictor of responsibility and coherence whereas positive predictor of etiquette, Security, and well-being/health.

The analysis results demonstrate the responses of the participants across gender. Results of the independent sample t-test explain that there is a difference between genders across the research variables. Similarly, multi-variance of ANOVA across age ranges of the research participants also shows significant results. This demonstrates that digital citizenship is a multidimensional construct as it is significantly different across age ranges as well as gender differences. Mediation analysis through regression shows that life satisfaction is a strong mediator between self-esteem and the five-dimensional digital citizenship constructs through bootstrapping. In addition, it was also observed that there were significant differences among the residents of different regions on all aspects of digital citizenship, life satisfaction, and self-esteem.

The Geographical Distributions of Mean, Standard Deviation

Another significant difference was seen that regions like Baha and Joaf, where all four dimensions of digital citizenship were reported with high mean scores. More interestingly these regions are border areas of KSA. In the literature, there weren't any hints or clues found. But one possible reason behind this is that, in those regions, there are not too many developments work had been carried out. Also, living in border areas and making connections and interacting with other people may have also laid an impact on the digital citizenship, self-esteem, and life satisfaction level among residents of these areas.

6. Implications

This contributes several implications in practical, personal, social, and various other domains of life. The practical domain encompasses the usage, applicability, and efficacy of the Digital Citizenship Questionnaire in the field of education for the fulfillment of knowledge and research gap. Previous evidence validates the usage of the DC questionnaire for further research. Potential researchers should use this tool to assess and diagnose the digital citizenship behavior of their respected samples. Community leaders, technology leaders, policymakers, and educators should use this questionnaire to identify and demonstrate the characteristics and qualities of a good citizen of a digital society and to assess individuals' digital citizenship traits.

7. Limitations

The results have several shortcomings concerningvarious important factors. First, the study did not cover and explain the full breadth of online behavior. Second, data were collected from the Saudi population only and have limited generalize ability power. Third, item pooling for each sub-domain resulted in small pool sizes, and so the scale is unable to significantly measure the whole construct. Fourth, concerning data size, the greater the data from each of the regions the greater the confidence and precision of the scale's results and help in the generalization. This phenomenon is important to study because, in the era of globalization and ubiquitous computing use, there are number of advantages and disadvantages of standard citizenship. This helps in better understanding of the construct and its applicability.

8. Conclusion

In conclusion, the study aimed to better understand the meaning, nature, and impact of digital citizenship for Saudi adults. The data gathered provide useful insights into the construct and its relationship with various other constructs. The results will help to develop safe, responsible, and ethical users of digital technology.

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Conflict of Interest Disclosure

Authors have no conflict of interest to declare.

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