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PROGRAMME

# KUWAIT'S ENDURING DIGITAL DIVIDE

SOCIO-DEMOGRAPHIC  
CHARACTERISTICS  
RELATIVE TO ICT ACCESS,  
SKILLS AND OUTCOMES

Fahed Al-Sumait  
and Cristina Navarro



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Kuwait's Enduring Digital Divide:  
Socio-Demographic Characteristics Relative  
to ICT Access, Skills, and Outcomes

Fahed Al-Sumait and Cristina Navarro

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## Abstract

Kuwait has ambitious plans to shift away from its current dependence on hydrocarbon resources toward a more knowledge-based economy wherein information and communication technologies (ICTs) will play a critical role. As one of the world's wealthiest and most digitally connected countries, it appears to have several advantages in leveraging technology to help achieve its national goals. However, significant questions remain as to how well its digital infrastructure translates into tangible outcomes for its highly diverse society. With an expatriate-majority population comprising of a high number of migrant workers, many of whom possess limited levels of education and ICT access, ensuring more equitable distribution of its digital resources is paramount to its plans for digital transformation. Using data from a national survey, this paper highlights the current state of digital inequalities in the country according to the domains of ICT access, skills, and achieved outcomes. Findings indicate while digital parity appears to exist between genders, significant gaps remain according to such factors as age, education, and nationality.

## Introduction

The country of Kuwait has ambitious plans to reduce its dependence on hydrocarbon resources, which currently comprise nearly half of its GDP and 95 percent of its exports,<sup>1</sup> by transitioning toward a more knowledge-based economy in which information and communication technologies (ICTs) will play a significant role. While the country ranks among the world's leaders in terms of its digital connectivity at the national level, there is less clarity about the distribution of digital skills among various communities within Kuwait and their ability to achieve tangible outcomes from the widespread availability of ICTs, especially pertaining to traditionally marginalised groups.

This study utilises data from a national survey of 746 respondents representing a cross-section of Kuwait's population to identify variations in ICT access, skills, and outcomes according to differing sociodemographic characteristics in an attempt to identify the contemporary state of Kuwait's digital divide. The phenomenon commonly referred to as the 'digital divide' encompasses disparities in access and utilisation of ICTs among individuals, households, businesses, and geographic regions of differing socioeconomic statuses.<sup>2</sup> Initially popularised by journalists and policymakers,<sup>3</sup> the concept underscored the risks associated with excluding underprivileged individuals and minority communities from online participation. Economic inequalities were initially seen as the most important aspect for understanding the digital divide, and proposed solutions to digital inequalities were often presumed to be improving and subsidising digital infrastructure in poorer regions and lowering the costs of connections or providing free/low-cost devices with which individuals could access the internet.

Over time, the conversation surrounding digital divides has evolved beyond mere internet access to encompass broader dimensions, such as internet skills, usage patterns, and the tangible outcomes of digital engagement.<sup>4</sup> This expanded perspective, often termed the 'third-level digital divide',<sup>5</sup> focuses on scenarios where the possession of digital skills and internet usage fails to yield favourable outcomes.<sup>6</sup> Acknowledging the multidimensionality and complexity of the digital divide, contemporary understanding recognises its strong association with a range of social, economic, and cultural factors that contribute significantly to the perpetuation of existing social inequalities.<sup>7</sup>

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<sup>1</sup> Dina Al-Shawa, 'Kuwait - Oil and Gas', *International Trade Administration* (2022). Available at: <https://www.trade.gov/country-commercial-guides/kuwait-oil-and-gas> (accessed 4 June 2023).

<sup>2</sup> 'Understanding the Digital Divide', *OECD Digital Economy Papers* 49 (2001), p. 8.

<sup>3</sup> David J. Gunkel, 'Second Thoughts: Toward a Critique of the Digital Divide', *New Media & Society* 5/4 (2003), pp. 499–522.

<sup>4</sup> Christian Fuchs, 'The Role of Income Inequality in a Multivariate Cross-National Analysis of the Digital Divide', *Social Science Computer Review*, 27/1 (2009), pp. 41–58; Jan A. Van Dijk 'The Deepening Divide: Inequality in the Information Society', *Mass Communication & Society* 11 (2005), pp. 221–3.

<sup>5</sup> Kwok-Kei Wei et al., 'Conceptualizing and Testing a Social Cognitive Model of the Digital Divide', *Information Systems Research* 22/1 (2011), pp. 170–87.

<sup>6</sup> Michael J. Stern, Alison E. Adams and Shaun Elsasser, 'Digital Inequality and Place: The Effects of Technological Diffusion on Internet Proficiency and Usage Across Rural, Suburban, and Urban Counties', *Social Inquiry* 79/4 (2009), pp. 391–417; Alexander J.A.M. Van Deursen, Ellen J. Helsper and Rebecca Eynon, 'Development and Validation of the Internet Skills Scale (ISS)', *Information, Communication & Society* 19/6 (2016), pp. 804–23.

<sup>7</sup> Giuseppe Bruno et al., 'A Critical Analysis of Current Indexes for Digital Divide Measurement',

Research has consistently shown that digital inequalities persist across various segments of the global population and have significant implications for economic, social, and political outcomes. It is therefore crucial to identify the factors that limit individuals' access to digital technologies and impede their ability to actively participate in the digital society.<sup>8</sup> Addressing these digital inequalities is important not only for promoting equal opportunities, but also for fostering economic growth, social inclusion, and ensuring that all individuals can fully participate in and benefit from the digital age.<sup>9</sup> In a country like Kuwait, identifying communities of digital exclusion and developing policies and initiatives to rectify this is central to the country's ability to achieve its national strategy.

Understanding digital inequalities becomes especially challenging in diverse contexts where various social, economic, and ethnic groups exist, occupying different positions within the societal hierarchy. Examining how these groups access and utilise information and communication technologies, and how their digital engagements either alleviate or exacerbate social disadvantages is essential.<sup>10</sup> Due to the high proportion of migrants in Kuwait relative to the local population, the country's demographic environment can be described as an expatriate-majority state.<sup>11</sup> Expatriates from countries around the world comprise approximately two-thirds of the resident population and make up 95 percent of the private sector workforce.<sup>12</sup> Kuwait's expatriates bring with them a multitude of languages, educational levels, and a diverse set of digital skills and needs. However, stark disparities exist between locals and most expatriates in terms of economic, political, social, and personal forms of capital.

Educational levels in the country are a telling example of such disparities. According to data from the country's Public Authority for Civil Information,<sup>13</sup> the educational level of more than 60 percent of the total population over the age of 18 does not exceed that

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*Information Society* 27/1 (2010), pp. 16–28; Ellen J. Helsper, 'A Corresponding Fields Model of the Digital Divide', *Communication Theory* 22/4 (2012), pp. 403–26; Van Dijk, 'The Deepening Divide'; James C. Witte and Susan E. Mannon, 'The Role of Information Technology in the Digital Divide', *The Journal of Technology Studies* 36/1 (2010), pp. 14–25.

<sup>8</sup> 'Women's Rights Online: Closing the Digital Gender Gap for a More Equal Future', *World Wide Web Foundation* (2020). Available at: <https://webfoundation.org/research/womens-rights-online-2020> (accessed 6 November 2023); Alicja Pawluczuk, Jeong-Hyun Lee and Attlee M. Gamundani, 'Bridging the Gender Digital Divide: An Analysis of Existing Guidance for Gender Digital Inclusion Programmes' Evaluations', *Digital Policy, Regulation and Governance* 23/3 (2021), pp. 287–99; Araba Sey and Nancy Hafkin, 'Measuring Digital Development: Facts and Figures 2019', *International Telecommunication Union* (2019). Available at: <https://www.itu.int/en/ITU-D/Statistics/Pages/facts/default.aspx> (accessed 6 November 2023).

<sup>9</sup> Ellen J. Helsper and Alexander J. van Deursen, 'The Third-Level Digital Divide: Who Benefits Most from Being Online?', *Communication and Information Technologies Annual* 10 (2015), pp. 29–52.

<sup>10</sup> Wenhong Chen, 'The Implications of Social Capital for the Digital Divides in America', *The Information Society* 29/1 (2013), pp. 13–25.

<sup>11</sup> Fahed Al-Sumait et al., 'Evaluating Multicultural Educational Experiences and Intercultural Communication Competence in an Arab Context', *Journal of Intercultural Communication* (2022), pp. 64–74.

<sup>12</sup> 'Kuwait Central Statistical Bureau', *General Statistics* (2022). Available at: [https://www.csb.gov.kw/Pages/Statistics\\_en?ID=18&ParentCatID=2](https://www.csb.gov.kw/Pages/Statistics_en?ID=18&ParentCatID=2) (accessed 26 May 2023)

<sup>13</sup> 'Statistical Reports', *Public Authority for Civil Information* (2023). Available at: <https://www.paci.gov.kw/stat/StatIndicators.aspx> (accessed 26 May 2023)

of a high school level. Notably, expatriates comprise three-quarters of the population within that 60 percent who hold limited education. At the opposite end of the spectrum, Kuwaitis are also twice as likely to hold a postgraduate degree than expatriates. Given such diverse conditions, it is therefore necessary to comprehend the degree to which underlying structures and societal norms in the country perpetuate inequalities. This involves, for example, recognising how various social backgrounds and power dynamics intersect to shape and maintain community specific forms of digital inequality. This paper aims to gain a more comprehensive understanding of the nature and extent of digital exclusion among Kuwait's various communities which can then help policymakers, educators, civil society organisations, and others to create a more equitable and inclusive digital society.

## Digital Inequalities in Corresponding Fields

As discussed, recent literature emphasises the need to move beyond one-dimensional views of the digital divide and explore the context in which digital inequalities manifest. Factors such as geographic location, cultural norms, and institutional policies interact with individual characteristics to shape digital experiences. The Corresponding Fields Model theory provides such a framework by suggesting that individuals with greater advantages are likely to use technologies to increase these, while those with fewer advantages are less able to do so.<sup>14</sup> In addition, the advantaged are also more likely to gain 'collateral benefits' from their ICT use, increasing their resources in areas where they are less advantaged.<sup>15</sup> This leads to the perpetuation of broader social inequalities, as those who are already privileged 'offline' can maintain their advantages online, while those who are otherwise disadvantaged are less able to overcome these in the digital sphere. As such, the theory focuses attention on the larger societal and cultural forces that shape such social inequalities, including historical legacies, political and economic systems, and cultural beliefs and values.

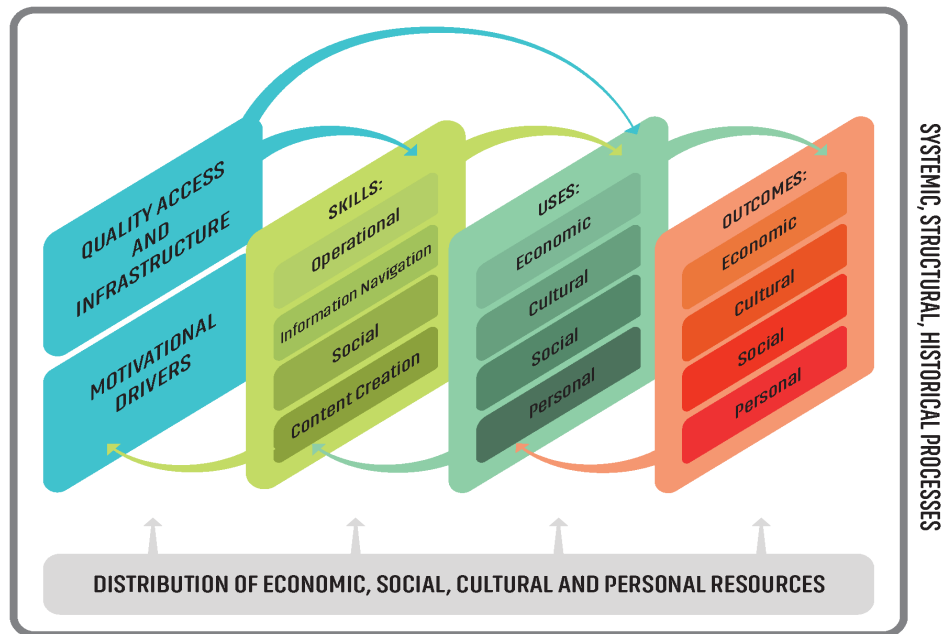
The present study expands upon conventional categorisations of exclusion zones in its conceptualisation by applying Helsper's Corresponding Fields Model to a survey design which identifies four primary areas of exclusion in the offline world that are mirrored in the digital realm: economic, cultural, social, and personal. The first three domains draw on Bourdieu's capital theory, which explains individuals' economic, cultural, and social assets. Helsper modified the conceptualisation of these domains based on current research and criticisms of Bourdieu's methodology. Figure 1 illustrates the key components of the model.

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<sup>14</sup> Helsper, 'A Corresponding Fields Model of the Digital Divide'.

<sup>15</sup> Alexander J. Van Deursen and Ellen J. Helsper, 'Collateral Benefits of Internet Use: Explaining the Diverse Outcomes of Engaging with the Internet', *New Media & Society* 20/7, (2018), pp. 2333–51.

Figure 1: Key Components of the Corresponding Fields Model<sup>16</sup>



## Kuwait's Digital Landscape

In recent years, Kuwait has made significant strides toward integrating ICTs into society relative to many Middle Eastern countries. Among the notable features are its nearly universal internet usage rates (99 percent) and active social media users (99 percent), high mobile phone connections (averaging between 1.6 to 1.8 phones per person), and its comprehensive 5G mobile coverage. According to the latest government data from the Communication and Information Technology Regulatory Authority (CITRA), by 2019 mobile phone and internet usage had become nearly universal, with daily usage rates at about 98 percent among the population and 95 percent for social media accounts.

The general level of access and the widespread availability of technologies have no doubt attenuated obstacles found at the first-level digital divide. What remains unclear is the degree to which digital skills are distributed among Kuwait's diverse population leading to differences between communities in the nature of the outcomes which they are able to achieve from ICTs. The aim of this research is to investigate the conditions surrounding these concerns at the third-level digital divide by investigating the relationships between the sociodemographic characteristics of gender, age, education, and nationality, including access to technology, digital skills, and the achievement of digital outcomes. The paper focuses on several hypotheses derived from a literature review and previous studies:

<sup>16</sup> Taken from Fahed Al-Sumait et al., 'Kuwait's Digital Inequalities Report', *Digital Skills to Tangible Outcomes Project Report* (2022). Available at: <https://www.lse.ac.uk/media-and-communications/assets/documents/research/projects/disto/Kuwait-report.pdf> (accessed 9 November 2023).



H1a: Men will report higher levels of access to digital technologies than women.

H1b: Younger users will report higher levels of access to digital technologies than older populations.

H1c: Users with lower levels of education will report lower levels of access to digital technologies than more-educated users.

H1d: Kuwaitis will report higher levels of access to digital technologies than non-Kuwaitis.

H2a: Men will report higher levels of operational, information-navigation, and creative skills than women.

H2b: Younger users will report higher levels of digital skills in all domains than older users.

H2c: The least-educated users will report lower levels of skills in all categories than more-educated users.

H3a: Men will report higher levels of overall achievement than women.

H3b: The least-educated users will report lower levels of economic achievement than more-educated users.

H3c: Non-Kuwaitis will report higher levels of cultural, social, and personal achievements than Kuwaitis.

## Methodology

### Data collection

Data were collected from a national survey of residents in Kuwait between October 2020 and January 2021, containing detailed information about various populations who use the internet to perform day-to-day activities, as well as important demographic information relating to participants, such as their age, gender, educational level, country of origin, and occupation. The final sample included 746 observations that met the criteria of having a completion rate higher than 80 percent and an appropriate completion time.

To recruit participants, a combination of Facebook, Instagram, and email campaigns were employed, leveraging the widespread use of social media platforms among residents. The survey was administered using Qualtrics, and respondents were given the option to choose between self-administered or interviewer-administered participation.

To ensure a representative sample, advertisements were created in both English and Arabic, targeting all individuals aged 18 to 65 years and older (the maximum age specified for Facebook ad targeting) residing in Kuwait. Throughout the recruitment process, regular evaluations of respondent demographics were conducted to identify any under-represented

groups in the sample. Targeted social media campaigns were then adjusted accordingly to ensure a more balanced representation. The demographic categorisations used in this report align with those employed by the Kuwaiti government in national figures and reports to facilitate comparability in the analysis and interpretation of the data.

**Table 1: Socio-Demographic Characteristics of the Sample**

	N	%
<b>Gender</b>		
Male	402	53.9
Female	344	46.1
<b>Education</b>		
Non-graduate	390	52.3
Graduate	356	47.7
<b>Nationality</b>		
Kuwaiti	247	33.1
Filipino	109	14.6
Indian	169	22.6
Other	221	29.6
<b>Age</b>		
18–25	294	39.4
26–40	314	42.1
41+	138	18.5

## Measures

Based on the Corresponding Fields Model, this study examined: 1) digital access; 2) four categories of skills (operational, information-navigation, social, and content creation); and 3) four domains of digital outcomes (economic, social, cultural, and personal). Access was measured in terms of the total number and types of internet-enabled devices to which respondents had direct access in their households. Internet skills were calibrated according to scales adopted by Van Deursen et al.<sup>17</sup> known as the Internet Skills Scale (ISS), which is composed of 25 questions identified to be credible and valid across various socio-economic characteristics. These are classified into four categories of skills, which include operational (nine items), information-navigation (five items), social (five items), and creative (five items), respectively. Each item was measured on a scale of one to five, with five being the highest score ('very true of me'). The scale was further developed for the youth skills project and adjustments were made to account for this.<sup>18</sup>

<sup>17</sup> Alexander J. Van Deursen, Ellen J. Helsper and Rebecca Eynon, 'Development and Validation of the Internet Skills Scale (ISS)', *Information, Communication and Society* 19/6 (2016), pp. 804–23.

<sup>18</sup> Ellen J. Helsper et al., 'The Youth Digital Skills Indicator: Report on the Conceptualisation and

Additionally, each of the four domains of internet outcomes (economic, cultural, social, and personal) were assigned associated items or questions. A total of 34 items were associated with internet usage. Frequency statements were measured on a scale of one to six ('never' to 'several times a day') as an ordinal response measure while agreement statements were measured on a 5-point Likert scale from 'strongly agree' to 'strongly disagree'. The economic domain was grouped into finance, property, education, and work, while the cultural category measured the identity and belongingness of an individual to various cultural, societal, and religious aspects of everyday life. The social domain was grouped into formal, informal, and civic categories, which denote how using the internet affects the way individuals connect through formal, informal, and civic interactions. The personal domain consisted of health, leisure activities, and self-actualisation characteristics.

To adapt the international DiSTO measures to the local context, it was necessary to use rigorous translation and back-translation techniques, face-to-face conceptual validations through cognitive interviews, and pilot testing procedures. After the selection of the optimal items for evaluating local conditions that maintained comparability with DiSTO projects worldwide, the scales were subjected to additional independent translations. Pilot testing was conducted in Arabic and English using interviewer-administered surveys to a sample of more than 100 random participants in various public locations in the country before final modifications were made to create the final versions of the instrument in both languages.<sup>19</sup>

### Significance Testing

To test the significance levels of variables included in the model, multiple regression analyses were applied, using ordinary least squares as well as logistic regressions, for skills and outcomes. The fully specified models incorporate several dummy or dichotomous variables to test differences across gender (men versus women), nationalities (Kuwaiti versus other categories), age (old versus other categories), and education (high school versus other categories). Results of the tests are reported at a 5 percent significance cut-off level. This allows the determination of which independent variables makes a significant contribution while also explaining the specified multiple regression models of the variables which require elaboration.

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Development of the ySKILLS Digital Skills Measure', *Zenodo* (2021). Available at: <https://zenodo.org/records/4608010> (accessed 13 November 2023).

<sup>19</sup> Full copies of the English and Arabic survey instruments are available at: <https://www.lse.ac.uk/media-and-communications/assets/documents/research/projects/disto/DiSTO-Kuwait-Survey-English-and-Arabic.pdf> (accessed 13 November 2023).

## Findings

### Access

The significance of digital access lies in its ability to enhance social interaction, stimulate economic growth, and drive overall societal progress, underscoring its crucial role in shaping modern civilisation. More specifically, having access to a variety of devices can be highly beneficial for individuals, as it expands their possibilities for communication, productivity, and engagement with the digital world. Table 2 provides an overview of device ownership averages among individuals across the various demographic categories sampled.

Access to internet devices, such as smartphone technology, is widespread across all groups who reported either close to or at 100 percent access to digital technologies and the internet. In terms of gender, being male is associated with lower odds of having access to internet-enabled devices compared to females ( $\beta = -0.98$ ,  $p < 0.05$ ). However, for access to smartphones only, males have higher odds ( $\beta = 1.214$ ,  $p < 0.05$ ) compared to females ( $\text{Exp}(\beta) = 3.368$ ).

According to age group, younger populations have a significant positive relationship with access to devices ( $\beta = -0.01$ ,  $p < .01$ ). Individuals aged 18–25 possess an average of 3.3 devices, while those aged 26–40, 41–60, and 60 and above exhibit average device ownership numbers of 2.4, 2.8, and 2.7, respectively. When considering educational levels, university students own an average of 3.4 devices, followed by post-graduates at 2.9 and those educated up to the high school level at 2.0. Data show that this population with the lowest educational level has a significantly higher probability of having a smartphone as their only internet-enabled device ( $p < .05$ ).

A person's place of origin is also a strong predictor of device access. Kuwaitis evidenced the highest level of device ownership with an average of 3.5 units, followed by other Arabs at 2.8 and Indians at 2.5. For access to internet devices, being Filipino has a negative effect ( $\beta = -2.664$ ,  $p < 0.001$ ), indicating considerably lower odds compared to Kuwaitis ( $\text{Exp}(\beta) = 0.0697$ ). When access is restricted to smartphones only, being Filipino has a positive effect ( $\beta = 2.604$ ,  $p < 0.001$ ) compared to Kuwaitis, indicating that Filipinos are considerably more likely to have only the one device with which to go online. Similarly, being from any other expatriate background negatively predicts access to devices ( $\beta = -0.926$ ,  $p < 0.001$ ) and positively predicts access to smartphones only ( $\beta = 1.700$ ,  $p < 0.001$ ).

**Table 2: Logistic Regression Age, Gender, Education, and Nationality Inter-Actions for Access Variables**

	Access to Internet Device			Smartphone-Only Access		
	$\beta$	Exp( $\beta$ )	SE	$\beta$	Exp( $\beta$ )	SE
Gender <sup>a</sup>	-0.98	0.373*	0.217	1.214*	3.368*	2.267
Education <sup>b</sup>	0.21	1.242	0.445	-0.432	0.649	0.251
Young adults <sup>c</sup>	-0.01	0.989	0.507	0.307	1.360	0.802
Youth <sup>d</sup>	-0.01	4.484**	2.662	-1.109	0.330	0.232
Filipino <sup>e</sup>	-2.664***	0.0697***	0.0330	2.604***	13.51***	7.899
Indian <sup>f</sup>	0.266	1.305	1.083	0.759	2.136	1.902
Other <sup>g</sup>	-0.926***	0.396***	0.129	1.700***	5.476***	2.314
Controls	1.983***	7.264***	3.877	-3.076***	0.0461***	0.0308
R-squared	682			674		
N	0.227			0.140		

For reference: \*\*\*  $p < .001$ , \*\*  $p < .01$ ; \*  $p < .05$ , <sup>a</sup> 0=Female 1=Male, <sup>b</sup> 0= Non-graduate or High School 1= Graduate, <sup>c</sup> 0= 40 + year olds 1= 26 to 40 year olds, <sup>d</sup> 0= 40 + year olds 1= 18 to 25 year olds, <sup>e</sup> 0= Kuwaiti 1= Filipino expats, <sup>f</sup> 0= Kuwaiti 1= Indian expats, <sup>g</sup> 0= Kuwaiti 1= Non-Indian or Filipino expats.

## Skills

A person's level of technical skill plays a crucial role in determining their ability to benefit from access to digital technologies. This study assessed four skill categories: operational, informational, social, and creative skills. To investigate the differences based on various demographic factors, a series of independent samples t-tests and regression (ANOVA) analyses were conducted (Table 3). The results reveal a significant gender difference in operational skills ( $\beta = 0.08$ ,  $p < .01$ ) and creative skills ( $\beta = 0.05$ ,  $p < .05$ ), indicating that women exhibited higher proficiency in these domains. However, no significant disparities were observed in information-navigation skills, social skills, and overall skills. Age is the most substantial differentiator regarding skills. Young adults and youth display significantly higher performance across each skill domain and in terms of overall skills ( $\beta = 0.16$ ,  $p < .001$ ). There is a consistent and inverse correlation between aging and digital aptitude for all four skills domains, with each type of skill diminishing as age increases. Looking at the influence of education, respondents in the lowest educational category demonstrate lower skills in all areas than those with university education or higher, but it was only significant for operational skills ( $\beta = 0.07$ ,  $p < .05$ ). Regarding the interaction effects with nationality, the results show that being Filipino is associated with higher scores in social skills ( $\beta = 0.11$ ,  $p < .05$ ). On the other hand, being Indian is linked to higher scores in operational skills ( $\beta = 0.14$ ,  $p < .01$ ) and information-navigation skills ( $\beta = 0.11$ ,  $p < .01$ ). Other nationalities do not significantly predict any of the categories of skills.

**Table 3: Logistic Regression Age, Gender, Education and Nationality Interactions for Skills**

	Operational		Information-Navigation		Social		Creation	
	$\beta$	se	$\beta$	se	$\beta$	se	$\beta$	se
Gender <sup>a</sup>	0.20***	0.07	0.07	0.05	0.12	0.08	0.06	0.06
Education <sup>b</sup>	0.07*	0.03	0.00	0.02	0.02	0.04	0.05	0.03
Young adults <sup>c</sup>	0.28***	0.06	0.09**	0.04	0.29***	0.07	0.16***	0.05
Youth <sup>d</sup>	0.37***	0.05	0.15***	0.04	0.48***	0.06	0.26***	0.05
Filipino <sup>e</sup>	0.07	0.05	0.02	0.04	0.11*	0.06	-0.03	0.05
Indian <sup>f</sup>	0.14**	0.07	0.11**	0.05	0.17**	0.08	0.00	0.06
Other <sup>g</sup>	0.02	0.03	0.01	0.02	0.06	0.03	0.00	0.03
Constant	0.11**	0.05	0.11**	0.04	0.25***	0.06	0.09*	0.05
Observations	679		679		676		677	
R-squared	0.120		0.042		0.126		0.074	

For reference: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ ; \*  $p < 0.05$ , <sup>a</sup> 0=Female 1=Male, <sup>b</sup> 0= Non-graduate or High School 1= Graduate, <sup>c</sup> 0= 40 + year olds 1= 26 to 40 year olds, <sup>d</sup> 0= 40 + year olds 1= 18 to 25 year olds, <sup>e</sup> 0= Kuwaiti 1= Filipino expats, <sup>f</sup> 0= Kuwaiti 1= Indian expats, <sup>g</sup> 0= Kuwaiti 1= Non-Indian or Filipino expats

## Outcomes – Achievements

In addition to access and skills, the survey evaluated the outcomes people derived from ICT uses as represented by their achievements in economic, cultural, social, and personal domains. When looking across the four domains, the highest level of advantageous outcomes accomplished are in the personal domain (63% on average), which also makes up the highest area of ICT usage. The other three domains (economic, social, and cultural) have a similar average between 58–9% achievement rate for activities undertaken. The two highest outcomes are realised in relation to leisure activities (68%) and educational pursuits (68%). The two least extensive outcomes both relate to the economic domain. These include buying and selling products or services online (collectively referred to as property) (44%) and work-related achievements (56%).

Examining outcomes achieved according to demographic groups, no significant differences are found according to gender. According to age, the youngest group shows a significant negative relationship with economic achievements ( $\beta = -0.14$ ,  $p < .001$ ) and personal achievements ( $\beta = -0.13$ ,  $p < .01$ ), indicating that youth tend to have lower scores in these categories compared to other age groups. Youth does not significantly predict cultural or social achievements. Interestingly, education shows a significant negative relationship with economic achievements ( $\beta = -0.05$ ,  $p < .05$ ), indicating that higher levels of education are associated with lower scores in economic achievements. Regarding nationality, being Indian shows a significant positive relationship with personal achievements ( $\beta = 0.13$ ,  $p < .01$ ), implying that individuals of Indian nationality tend to have higher levels of personal achievements online.

Looking at the relationship between skills and outcomes, higher level of operational skills demonstrates a significant positive relationship with economic achievements ( $\beta = 0.10$ ,  $p < .01$ ), suggesting that individuals with better operational skills tend to have higher scores in the economic domain. Additionally, higher level of social skills positively correlates with cultural ( $\beta = 0.15$ ,  $p < .001$ ) and personal achievements ( $\beta = 0.13$ ,  $p < .001$ ), and creative skills shows a significant positive relationship with social achievements ( $\beta = 0.12$ ,  $p < .05$ ).

**Table 4: Logistic Regression Age, Gender, Education, and Nationality Inter-Actions for Outcomes**

	Economic		Cultural		Social		Personal	
	B	se	$\beta$	se	$\beta$	se	$\beta$	se
Gender <sup>a</sup>	-0.06	0.06	0.00	0.08	-0.08	0.06	-0.07	0.06
Education <sup>b</sup>	-0.05*	0.03	-0.03	0.04	-0.05	0.03	-0.02	0.03
Young adults <sup>c</sup>	-0.05	0.05	0.02	0.07	-0.01	0.05	-0.09	0.05
Youth <sup>d</sup>	-0.14***	0.05	0.03	0.07	-0.12**	0.05	-0.13**	0.05
Filipino <sup>e</sup>	-0.03	0.05	0.04	0.07	0.01	0.05	0.08	0.05
Indian <sup>f</sup>	-0.08	0.06	0.06	0.08	-0.04	0.06	0.13**	0.06
Other <sup>g</sup>	-0.01	0.02	0.00	0.04	-0.00	0.02	0.03	0.03
Operational Skills	0.10**	0.05	-0.03	0.06	-0.03	0.05	-0.00	0.05
Infor-Navig. Skills	-0.04	0.05	0.00	0.08	0.04	0.05	-0.02	0.06
Social Skills	-0.00	0.04	0.15***	0.05	0.02	0.04	0.13***	0.04
Creative Skills	0.05	0.04	0.02	0.06	0.12**	0.04	0.06	0.05
Constant	0.65***	0.05	0.50***	0.07	0.63***	0.05	0.64***	0.05
Observations	662		619		663		656	
R-squared	0.050		0.046		0.048		0.079	

For reference: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ , <sup>a</sup> 0=Female 1=Male, <sup>b</sup> 0= Non-graduate or High School 1= Graduate, <sup>c</sup> 0= 40 + year olds 1= 26 to 40 year olds, <sup>d</sup> 0= 40 + year olds 1= 18 to 25 year olds, <sup>e</sup> 0= Kuwaiti 1= Filipino expats, <sup>f</sup> 0= Kuwaiti 1= Indian expats, <sup>g</sup> 0= Kuwaiti 1= Non-Indian or Filipino expats.

## Discussion

As the digital landscape evolves, moving from concerns over access to those of skills, uses, and outcomes, strategies aimed at narrowing or addressing digital inequalities must also adapt. However, due to the significant socio-political and economic gaps between various populations residing in Kuwait, this emphasis remains a top priority. Policymakers and technology providers can work toward creating a more inclusive digital ecosystem that ensures residents, regardless of their backgrounds, have equitable access to digital technologies, opportunities, and benefits.<sup>20</sup> Findings from this study illustrate particular communities among whom the third-level digital divide remains an obstacle, thereby impeding Kuwait's larger ambitions for society's digital transformation.

Hypothesis 1a stated that men will report higher levels of access to digital technologies than women. This was not supported. Women have access to a slightly higher average number of devices in contrast to the situation more commonly found globally and in the wider Middle East. Of note, this condition seems to mirror the situation in other Arab Gulf countries.<sup>21</sup> This suggests that in settings where ICT saturation is nearly universal, costs are relatively low, and local populations are sufficiently affluent, traditional obstacles to women's technological access can erode, allowing the digital gender gap to close. The higher device ownership among women in Kuwait may also be due in part to the higher proportion of women with higher education compared to men.

Hypothesis 1b stated that younger users will report higher levels of access to digital technologies than older populations. This was supported. The youngest age group aged 18–25 report the highest levels of access with an average of 3.3 devices showing a significant positive relationship ( $\beta = -0.01$ ,  $p < .01$ ). Of note, the next age group aged 26–40 has slightly lower levels of access (2.4) compared to older age groups which average 2.7 devices between them, though the differences are not statistically significant. Part of the explanation for the access in this second-youngest age group may be because they represent the highest proportion of expatriate workers, many of whom have lower levels of education and income than the local population and are more likely to be restricted to smartphone-only ownership. Indeed, smartphone-only access is twice as likely among males than females as well as within the lowest educated group who are primarily represented by expatriate workers.

Hypothesis 1c stated that users with lower levels of education will report lower levels of access to digital technologies than more-educated users. This was supported. As a group, people with education up to, or terminating at a high school degree report the lowest

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<sup>20</sup> Ana Cusolito et al., 'The Upside of Digital for the Middle East and North Africa: How Digital Technology Adoption Can Accelerate Growth and Create Jobs', *World Bank Group* (2021). Available at: <https://www.worldbank.org/en/region/mena/publication/the-upside-of-digital-for-the-middle-east-and-north-africa> (accessed 14 November 2023).

<sup>21</sup> 'Digital Trends in the Arab States Region 2021: Information and Communication Technology Trends and Developments in the Arab States Region, 2017-2020', *International Telecommunication Union* (2021). Available at: <https://www.itu.int:443/en/publications/ITU-D/Pages/publications.aspx> (accessed 30 May 2023).



levels of access with an average of 2.0 devices and are more likely to have a smartphone as their only internet-enabled device ( $p < .05$ ). Those who hold a university degree or are currently enrolled in university have access to the most devices with an average of 3.4, but the number drops again slightly among people with a graduate degree (Master's degree or PhD) at 2.9. This condition may reflect the specific age group represented by university students/recent graduates, as well as the high demand for ICT use in university settings.

Hypothesis 1d stated that Kuwaitis will report higher levels of access to digital technologies than non-Kuwaitis. This was supported. Being an expatriate negatively predicts access to devices ( $\beta = -0.926$ ,  $p < 0.001$ ) and positively predicts access to smartphones only ( $\beta = 1.700$ ,  $p < 0.001$ ). Kuwaitis are the nationality group with the highest levels of access at 3.5 devices and the lowest group to have smartphone-only access at .04 devices. Among the non-Kuwaitis, other Arabs (2.8) hold higher levels of access than Indians (2.5), Filipinos (2.0) and other Asians (2.1). This trend is also reflected with non-Kuwaiti Arabs and Indians (both 0.2) less likely to have smartphone-only ownership among the expatriate groups relative to Filipinos and other Asians (0.4 each). This further supports the claim stated in relation to hypotheses 1b that the high proportion of expatriate workers make up the most disadvantaged populations.

Hypothesis 2a stated that men will report higher levels of operational, information-navigation, and creative skills than women. This was partially supported. While men report higher levels of certain skills, the only significant statistical difference is in operational skills. This could suggest that, in combination with factors such as women's higher levels of university enrolment and education, and as the gender access gap otherwise closes, so too can the gap in digital skills.<sup>22</sup>

Hypothesis 2b stated that younger users will report higher levels of digital skills in all domains than older users. This was supported. As expected, 'digital natives' have a deeper familiarity with ICTs than their older counterparts and this familiarity translates directly into higher levels of skills across all four domains measured as well as in overall skills ( $\beta = 0.16$ ,  $p < .001$ ). The youngest users (age 18–25) dominate in terms of their ability to use ICTs (operational skills), find online information (information-navigation skills), and create digital content (creative skills), with a high degree of statistical significance. They are also more proficient with their social skills than older users, scoring considerably higher than people over 40 years old, but the differences between this youngest group and users aged 26–40 are less significant, as the majority of this middle-range group can also arguably be classified as digital natives themselves.

Hypothesis 2c stated that the least-educated users will report lower levels of skills in all categories than more-educated users. This was partially supported. While differences between the least educated and other educational groups are present for information-navigation, creative, and social skills, only operational skills evidenced a statistically significant

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<sup>22</sup> 'Arab Digital Development Report 2019: Towards Empowering People and Ensuring Inclusiveness', *United Nations* (2019). Available at: <https://archive.unescwa.org/publications/arab-digital-development-report-2019> (accessed 14 November 2023).

difference. Differences in operational skills according to education are predicted in the literature. However, the limited variation in other types of skills is more perplexing. One plausible explanation for the absence of statistical significance between educational groups in these skills may be the widespread similarities in relative distributions overall across two of the skills domains. Social skills are the highest type among each educational group while information-navigation ranks the lowest. Therefore, the variations between groups on these domains may be less pronounced.

Hypothesis 3a stated that men will report higher levels of overall achievement than women. This was not supported. No statistically significant differences are present for aggregate scores of outcome achievements. These findings demonstrate that despite the genders reporting some differences in access and skill levels, these do not appear to make a difference in the degree to which men and women are able to derive outcomes from their ICT use.

Hypothesis 3b stated that the least-educated users will report lower levels of economic achievement than more-educated users. This was not supported. Education shows a significant negative relationship with economic achievements ( $\beta = -0.05, p < .05$ ), indicating that higher levels of education are associated with lower scores in economic achievements. This finding may be explained by the timing of the data collection during the COVID-19 pandemic. Using digital technologies for education, work, and finance comprise the highest levels of economic uses and during that time people with higher levels of education were more likely to be enrolled in school or conducting work in which they were expected to rapidly shift online to accomplish their tasks. Since such applications were relatively novel prior to the pandemic, users may have experienced higher levels of frustration in doing so which resulted in lower levels of satisfaction compared to less-educated users whose are more likely to hold jobs that cannot be conducted virtually. Additionally, the high migrant population in Kuwait often use digital means to send remittances to their home countries, and many were likely to do this prior to the pandemic, thus possibly resulting in higher levels of satisfaction within this subdomain.

Hypothesis 3c stated that non-Kuwaitis will report higher levels of cultural, social, and personal achievements than Kuwaitis. This was partially supported. This is the case among all Asian expatriates, though other Arabs score similarly to Kuwaitis with regard to cultural, social, and personal achievements. Perhaps the cultural and linguistic similarities among Arabs compared to communities from other Asian countries might help explain this finding. For people from Arab backgrounds, there are more offline opportunities in Kuwait to socialise and engage in cultural practices based on such factors as shared language, cultural norms and activities, and even religious rituals for many. In contrast, Asian expatriates, who represent a more diverse set of communities, might be more inclined to look for suitable cultural, social, and personal activities online. In other words, the greater sociocultural fragmentation among varied Asian expatriate communities might lead them to seek out, and better achieve, outcomes in these domains compared to Arab communities (local or expatriate) who find a higher degree of homophily present in Kuwait and are therefore less likely to seek online outcomes in these areas.

## Recommendations and Conclusion

In evaluating the findings collectively, a few trends are notable. First, Kuwait does not appear to evidence a significant digital gender gap since women outperform men in terms of their diversity of device access, score higher on two skills levels, and demonstrate similar levels of digital achievement to men. This of course does not mean that programs targeting skill development among women are no longer warranted, but rather that particular groups of both men and women should be considered, especially with regard to expatriates who hold lower levels of education, as it is at these intersectional identity points that Kuwait still evidences considerable room for growth. Policymakers can take the lead by designing projects that consider the unique challenges that hold women and girls of differing backgrounds back from fully benefiting from the digital economy's opportunities.<sup>23</sup>

Concerning differences according to age, younger users regularly demonstrate higher levels of access and digital skills than older groups, consistent with findings in other parts of the world. To address this disparity more attention would be welcomed from policymakers, educators, and civil society organisations that offer programs on digital education targeting older populations. For example, implementing comprehensive digital education initiatives tailored to the specific needs and learning preferences of older adults or offering in-person workshops and training sessions that provide practical guidance facilitated by experienced trainers that foster a supportive learning environment. Additionally, online resources, including user-friendly tutorials and instructional videos, can better cater to the convenience of older learners and cover an array of proficiencies, ranging from fundamental computer operations to more advanced tasks such as online banking and telehealth utilisation. Acknowledging diverse learning preferences, such initiatives offer flexibility through self-paced learning, personalised tutoring, and group sessions. The integration of intergenerational collaboration can be facilitated via digital mentoring programs, pairing tech-savvy younger mentors with older learners to cultivate a mutually beneficial learning atmosphere and bridge generational divides. It also crucial to extend adult education on-the-job and in public locations adapted to the cultures and needs of participants.<sup>24</sup> Again, when age is considered in tandem with factors such as nationality and educational level, providing more opportunities for marginalised communities (both online and offline) can expand people's opportunities to better engage with, and benefit from, digital technologies.

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<sup>23</sup> 'Digital Europe: Next Steps a European Agenda for the Digital-9+)', *Lisbon Council Research* (2018). Available at: [https://lisboncouncil.net/wp-content/uploads/2020/07/LISBON\\_COUNCIL\\_RESEARCH\\_Next\\_Steps\\_for\\_Digital\\_Europe.pdf](https://lisboncouncil.net/wp-content/uploads/2020/07/LISBON_COUNCIL_RESEARCH_Next_Steps_for_Digital_Europe.pdf) (accessed 14 November 2023); Judy Wajcman, Erin Young and Anna Fitzmaurice, 'The Digital Revolution: Implications for Gender Equality and Women's Rights 25 Years After Beijing', *UN Women* (2020). Available at: <https://www.unwomen.org/sites/default/files/Headquarters/Attachments/Sections/Library/Publications/2020/The-digital-revolution-Implications-for-gender-equality-and-womens-rights-25-years-after-Beijing-en.pdf> (accessed 14 November 2023).

<sup>24</sup> 'Towards a New Social Contract: Reducing Inequalities through Digital Public Goods and Youth Collaboration for the Sustainable Development Goals (SDGs)', *United Nations* (2022). Available at: <https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2022/01/Digital-Public-Goods-Submission.pdf> (accessed 14 November 2023).

The European Commission argues that everyone has the right to education, training and life-long learning and should be able to acquire basic and advanced digital skills.<sup>25</sup> In exploring the influence of education, the least-educated groups still suffer from limitations in access to a diverse range of internet-enabled devices, which are a necessary component for availing the wide range of potential benefits the internet has to offer. Looking at the relationship between levels of education and digital skills did not reveal the expected correlations across the various domains tested. Clearly, a person's operational skills are impacted by their levels of education, however, information-navigation, social, and cultural skills, while showing an expected trend according to educational levels, were not statistically significant on this measure. The implication is that these other types of skills may be fostered through means beyond formal education and thus are less in need of redress than operational skills among the least educated. Critically, digital strategies targeting any type of digital skills enhancement need to be updated regularly to respond to the emergence of new technologies and their impact on the digital economy and digital society, including training that includes soft skills to prevent the 'negative' outcome of formal training that 'slots individuals into gaps' in the job market.<sup>26</sup>

Of note, the relatively low levels of information-navigation skills across all educational levels implies that more could be done in terms of public policies, education, training, and informational campaigns on how people can more successfully navigate the vast amounts of information available online. To a degree, this could also be an artifact of the timing of data collection during the pandemic. At the time, many people struggled to find credible information about the virus (its origins, protective measures, social and economic impacts, etc.) which could be reflected in the data. Future research evaluating people's digital skills taken after the initial dangers of the pandemic have subsided can shed light on the degree to which informational-navigation remains an issue in Kuwait.

Finally, with regard to a person's place of origin, clear differences between Kuwaitis and especially Asian expatriates exist concerning device access and outcome achievements. Public policies should encourage equal access to online resources particularly for expatriates by providing public access to technologies, facilitating low-cost or free internet access for limited durations, and establishing digital literacy training programs tailored to the specific challenges, needs, and languages of Kuwait's expatriate communities. Working in partnership with the private and third sector, as well as educational institutions that serve these communities can help to create more equitable digital outcomes which not only benefit individuals but also the economy more broadly.<sup>27</sup> Finding opportunities to remove barriers and add incentives for expatriates to go online (such as customised costing, relevant content provision, additional language options, and easily accessible public Wi-Fi) will foster greater equity among nationalities. In turn, this will engender greater engagement with ICTs that improves productivity and general well-being among the two-thirds of the population in Kuwait who are not Kuwaiti while bringing greater digital dividends to society as a whole.<sup>28</sup>

<sup>25</sup> 'European Declaration on Digital Rights and Principles for the Digital Decade', *European Commission* (2023). Available at: <https://digital-strategy.ec.europa.eu/en/library/european-declaration-digital-rights-and-principles> (accessed 14 November 2023).

<sup>26</sup> Ellen Helsper, *The Digital Disconnect: The Social Causes and Consequences of Digital Inequalities*, (Sage: London, 2021).

<sup>27</sup> 'Accelerating Gender Equality in Digital Development', *World Bank Group* (2021). Available at: <https://thedocs.worldbank.org/en/doc/61714f214edo4bcd6e9623adoe215897-0400012021/related/Digital-Development-Note-on-Gender-Equality-November2021-final.pdf> (accessed 14 November 2023).

<sup>28</sup> 'Arab Horizon 2030: Digital Technologies for Development', *United Nations* (2019). Available at: <http://www.unescwa.org/publications/arab-horizon-2030-digital-technologies-development> (accessed 14 November 2023).

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Workers hanging on ropes at the sphere of the Kuwait Tower.

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