

Digital Divide and Digital Competence among Accounting Students

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ABSTRAK

Masalah penelitian ini adalah adanya kesenjangan digital di kalangan mahasiswa akuntansi di Indonesia, meskipun pertumbuhan ekonomi digital yang pesat di Asia Tenggara. Tujuan penelitian ini adalah untuk mengeksplorasi hubungan antara kesenjangan digital, dilihat melalui faktor-faktor sosial, dan kompetensi digital mahasiswa akuntansi. Penelitian ini menggunakan pendekatan kuantitatif dengan subjek penelitian berupa mahasiswa akuntansi. Data dikumpulkan melalui survei dengan kuesioner yang didistribusikan kepada 398 mahasiswa akuntansi di berbagai perguruan tinggi di Indonesia. Analisis data dilakukan menggunakan uji deskriptif dan uji non-parametrik. Hasil penelitian menunjukkan bahwa faktor-faktor sosial memiliki pengaruh signifikan terhadap akses digital dan kompetensi digital mahasiswa. Mahasiswa yang lebih muda cenderung memiliki tingkat kompetensi digital yang lebih tinggi. Faktor-faktor keluarga seperti pendidikan orang tua, pekerjaan, dan pendapatan juga signifikan memengaruhi kemampuan digital mahasiswa. Selain itu, kepemilikan komputer oleh mahasiswa dan integrasi teknologi yang efektif oleh dosen juga berdampak pada kompetensi digital mahasiswa. Kesimpulannya, kesenjangan digital masih terjadi di kalangan mahasiswa akuntansi di Indonesia, yang mempengaruhi kompetensi digital mereka. Implikasi penelitian ini termasuk perlunya perluasan kurikulum dan intervensi sosial untuk mengatasi kesenjangan digital di kalangan mahasiswa akuntansi, memastikan kesiapan mereka dalam menghadapi era digital.

ABSTRACT

The problem of this research is the existence of a digital divide among accounting students in Indonesia despite the rapid growth of the digital economy in Southeast Asia. This research explores the relationship between the digital divide, seen through social factors, and the digital competence of accounting students. This research uses a quantitative approach, with the subjects being accounting students. Data was collected through a survey with a questionnaire distributed to 398 accounting students at various universities in Indonesia. Data analysis was carried out using descriptive tests and non-parametric tests. The research results show that social factors significantly influence students' digital access and competence. Younger students tend to have higher levels of digital competency. Family factors such as parental education, employment, and income significantly influence students' digital abilities. In addition, computer ownership by students and effective technology integration by lecturers also impact students' digital competence. In conclusion, the digital divide still exists among accounting students in Indonesia, which affects their digital competence. The implications of this research include the need for curriculum expansion and social interventions to overcome the digital divide among accounting students, ensuring their readiness to face the digital era.

1. INTRODUCTION

This research will delve into the issues surrounding the digital divide in Indonesia, particularly among students in the accounting program. The digital divide has become more pronounced as the demand for digital skills among accounting graduates has increased. This study will provide an overview, including the background regarding the existence of the digital divide amid the digital economic growth in Indonesia, research objectives, previous findings related to the digital divide and digital competence, the theoretical framework guiding the examination of variables, and conclude with the research questions and the novelty of this study. As research background, based on the World Bank report in 2021, it highlights the rapid

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growth of Indonesia's digital economy in Southeast Asia. However, despite this growth, approximately 49% of the adult population still needs access to the internet. Furthermore, considerable disparities persist across spatial, economic, and social dimensions (Adam & Dzang Alhassan, 2021; Chetty et al., 2018; Fox & Connolly, 2018). The term 'digital divide' refers to the differences in access and the ability to utilize information and communication technology among individuals, households, businesses, or geographical regions (Hadi, 2018; Lythreatis et al., 2022; Mathrani et al., 2022). These disparities are attributed to social factors encompassing income, employment, residence, education, social status, age, gender, geographic location, ethnicity, race, and family structure (Kim et al., 2018; Muthaiyah et al., 2021; Pawluczuk et al., 2021; Puspitasari & Ishii, 2016).

While the year 2020 data from the Central Statistics Agency (BPS) indicated a 73.7% internet penetration rate in Indonesia, internet access in rural areas remained notably lower compared to urban areas. This discrepancy is further exacerbated by unequal access to digital infrastructure, differing internet service quality, and varying levels of digital literacy. Several remote areas in Indonesia continue to grapple with challenges in obtaining reliable and high-quality internet connectivity. BPS findings underscore the existence of a Digital Divide that permeates access and the use of information technology across Indonesian society. Given these circumstances, the research's primary goal is to explore the digital divide's influence on accounting students' digital competence. Digital competence is the ability to adeptly employ information and communication technology applications within an academic context (Falloon, 2020; Kaarakainen et al., 2018). Previous studies have brought to light the presence of digital access disparities among Indonesian accounting students (Lythreatis et al., 2019; Qi et al., 2023; Rahardjo et al., 2016; Winardi & Anggraeni, 2017). This unequal technology access potentially hampers accounting students' capacity to cultivate vital digital skills essential for navigating a progressively digitalized job landscape, with implications for their future adaptability (Al Mallak et al., 2020; Mah'd & Mardini, 2022; Mameche, Y. et al., 2020). In light of the Fourth Industrial Revolution, which has ushered in unprecedented technological advancement, the imperative for adept use of information and communication technology (ICT) within the accounting profession has been underscored. Prospective accountants are required to adopt and leverage digital technology competently. Thus, accounting students must be adequately prepared to confront an environment marked by digitalization. Proficiency in digital skills forms a bedrock for providing efficient, high-quality services to clients or corporations and is pivotal in bolstering competitiveness within the evolving accounting profession.

However, existing research has pinpointed a disjuncture between industry expectations and the competencies of accounting graduates (Ali et al., 2016; Aryanti & Adhariani, 2020). Previous research has seen a significant misalignment between the accounting education curriculum and the skills demanded by employers in Indonesia (Phan et al., 2020; Roy, 2022). Their study unveiled a discord between the ICT skills possessed by Indonesian accounting graduates and the proficiencies sought after by employers. Moreover, a series of reports underscored various social factors that contribute to digital access disparities in Indonesia, including disparate access to digital infrastructure, economic status, age, education level, income, socio-cultural norms, and digital literacy level (Kim et al., 2018; Lythreatis et al., 2019; Qi et al., 2023; Rahardjo et al., 2016; Van De Werfhorst et al., 2022; Winardi & Anggraeni, 2017).

A comprehensive review conducted by Maryville University in 2013 identified three forms of digital access disparities: gender disparities, social disparities, and universal access disparities. Gender disparity highlights the lower digital access prevalent among women and children. The social difference pertains to unequal internet access, exacerbating social stratification, as groups lacking internet access cannot capitalize on online peer interactions. Universal access disparity, on the other hand, relates to individuals with physical disabilities who face barriers in accessing and effectively utilizing hardware and software devices. Against this backdrop, this research's exploration of the digital divide will specifically center on social factors, including geographical location, family economic circumstances, educational support such as ICT facilities, and the unique characteristics of each student's campus environment. Geographical factors play a pivotal role in shaping digital competence disparities. In remote or rural locales, access to information technology is often hampered by inadequate infrastructure and the need for more internet service providers catering to these areas. In contrast, urban centers enjoy enhanced information technology access due to superior infrastructure and a more extensive roster of internet service providers (Habibi et al., 2021; Rahardjo et al., 2016; Shin et al., 2021; van Kessel et al., 2022).

Furthermore, economic factors elucidate the disparities in financial standing that hinder some individuals in underdeveloped areas from affording information technology devices like laptops or smartphones. Additionally, internet costs can serve as a deterrent for those facing financial constraints. The availability of adequate ICT infrastructure, encompassing fast and stable internet access, profoundly influences one's ability to access and proficiently utilize digital technology. Financial capacity to purchase digital devices and services similarly impacts one's ability to access and effectively use digital technology.

The design of user-friendly digital devices and services, readily accessible to all individuals is instrumental in mitigating digital inequalities.

Hereafter, disparities among distinct societal cohorts, such as elderly individuals or those less proficient in technology use, contribute to digital skill disparities. Youth often demonstrate more excellent proficiency in information technology usage compared to their older counterparts. Educational attainment and individual digital skills are instrumental in fostering digital access equality. Those with higher educational backgrounds and advanced digital skills tend to utilize information technology more effectively (Qi et al., 2023; Vassilakopoulou & Hustad, 2021). An individual's level of education significantly influences their ability to access and proficiently employ digital technology.

Within this study, the Theory of Planned Behavior is employed to elucidate the influence of social factors on students' digital competence (Hilbert, 2014; Mulyaningsih et al., 2020). This occurs through their impact on individual attitudes, subjective norms—evinced by family characteristics—and behavioral control, manifest through campus facilities and features (Pagán et al., 2018; Pawluczuk et al., 2021; Qi et al., 2023). Personal attitudes toward the intention to adopt ICT exhibit divergence between genders and age groups (Torres-Díaz et al., 2016; Vassilakopoulou & Hustad, 2021). Subjective norms encapsulate the societal pressures that influence individual behavior (Ajzen, 2020; Sussman & Gifford, 2019). These norms can emanate from the family unit—the individual's immediate environment. For instance, if students acknowledge the significance and utility of possessing competency in information technology for their future, their attitude toward learning will be positive. If familial and peer support for learning information technology is present, their subjective norm will be positive. The availability of adequate facilities and campus characteristics also shapes perceptions of behavioral control. Campuses with well-equipped facilities for information technology learning, such as comprehensive computer laboratories and qualified instructors, facilitate student competence acquisition in this domain.

Through the above background, we aim to uncover the relationship between Digital Divide and students' digital competence, mainly focusing on the role of social factors. This investigation is expected to contribute insights into the ongoing discourse on digital disparities and their impact on accounting students in Indonesia. The novelty of this research stems from its holistic approach to understanding the digital divide among accounting students in Indonesia and its emphasis on the impact of social factors on digital competence. The findings are expected to provide valuable contributions to the ongoing discourse on digital disparities and their implications for accounting education and practice in the digital era

2. METHOD

Following the research objective of analyzing social factors' influence on accounting students' digital competence, this exploratory study will employ a quantitative approach with a survey research design using a questionnaire. The subjects of this study are students in the accounting program from various regions in Indonesia. Data will be collected through a survey process, distributing questionnaires to accounting students across various universities in Indonesia. The convenience sampling technique will be utilized, with program faculty members distributing the questionnaire links to students via survey platforms. Questions in the questionnaire will be designed to measure the research variables, including: (a) Social Factors Variables: These will be categorized into individual, family, and campus characteristics; (b) Digital Competence Variables: This encompasses a composite variable to assess proficiency levels using software applications such as Spreadsheet, Word Processing, Presentation, Accounting software, Data Security, and other applications. Obtained data will undergo statistical analysis to explore the impact of social factors on accounting students' digital competence. Variables will initially be analyzed individually, followed by inter-variable relationship analysis. For the Digital Competence Variable, data will be processed by computing indices or composite scores to measure students' proficiency levels using the software applications. The results of the data analysis will be interpreted to illustrate the influence of social factors on accounting students' digital competence. These findings will be described through narrative explanations and statistical analysis results.

Before analysis, data will be screened to ensure completeness and validity. A descriptive study will be conducted to present sample characteristics, including calculations such as means, maximum, and minimum values for each research variable. Multiple linear regression analysis will determine the impact of social factors (derived from individual, family, facility, and campus characteristics) on accounting students' digital competence. This will be measured by their proficiency in applications like spreadsheets, word processors, presentation software, accounting software, data security tools, and others.

Two research variables will be operationalized: (a) Social factors; (b) Digital Competence, evaluating the ability to use software applications using a 5-point Likert scale: 1 for Never Used, 2 for Not

Proficient, 3 for Slightly Proficient, 4 for Moderately Proficient, and 5 for Highly Proficient. Facility Characteristics showed in [Table 1](#).

Table 1. Facility Characteristics

Indicator Name	Measurement
Facility Characteristics	
Residential Area	Urban, Suburban, Rural
Distance from Home to Campus	< 5 km, 5- 10 km, 10- 15 km, >15 km
Access to Campus	Public Transportation, Riding a Motorcycle, Driving a Car, Riding a Bicycle, Using Online-based Transportation, Walking
Possession of stable and fast internet access for academic purposes at home	Yes, Unstable, No Internet Access
Type of Internet Access Used	Cable Connection, Mobile Data, WiFi
Paying a monthly fee to access the internet	Yes, No
Amount of Monthly Internet Access Fee	< Rp. 20,000,-, 20,000 – Rp. 50,000,-, 50,000 – Rp. 100,000,-, > Rp. 100,000,-
Constraints in accessing computer and Internet devices	1. Yes 2. No
Possessing a smartphone for academic purposes (such as reading emails, accessing lecture materials)	1. Yes 2. No
Possession of a computer or laptop for academic purposes (such as assignments presentations)	1. Yes 2. No
Possession of adequate access to computer devices and required software applications to develop digital skills as accounting students	1. Yes 2. No
Frequency of using computers outside of campus	Rarely, About once a month, Several times a week, Every day

3. RESULT AND DISCUSSION

Result

Results are the main part of scientific articles, containing: final results without data analysis process, hypothesis testing results. Results can be presented with tables or graphs, to clarify the results verbally. This section provides an overview of the data's descriptive analysis, highlighting the research respondents' demographic characteristics. Out of the collected data, a total of 401 responses were received, with 398 eligible for study. As outlined in [Table 1](#), the predominant gender among the respondents is female, constituting 76.9%, while the age bracket of 20 - 24 years encompasses the majority at 70.7%. Regarding family characteristics, it is evident that 71.3% of parents possess a high school education, and the spectrum of their occupations varies. Specifically, 29.9% are self-employed, 22.4% are engaged in farming or fishing, 15.8% are employed in the private sector, 10.6% are laborers, and the remaining categories consist of civil servants/military/police (10.3%), retirees (8.3%), and Teachers/lecturers (2.8%). Another dimension of family attributes, the number of dependents, indicates that most respondents have between 1 and 4 dependents, totaling 85.4%. Moreover, a significant portion of parents earn an income of less than 5 million IDR per month, comprising 64.6% of the sample. These familial indicators collectively portray respondents as originating from financially constrained backgrounds, where monthly income falls below 5 million IDR, while the number of family dependents remains substantial.

Examining respondents' characteristics related to their academic institutions, a balance is observed between those from public and private universities, constituting 47.5% and 52.5%, respectively. The accreditation status of the accounting study programs and the accounting universities predominantly showcase a B or Very Good rating, 59.5% and 70.1%, respectively. Regarding university support for enhancing digital skills, there exists a shortfall in the number of ICT-related courses and ICT infrastructure availability on campuses, yielding average scores of 2.97 and 2.96, respectively. However, the quality of instructors imparting ICT-related content receives an excellent score of 4, generating commendable outcomes with a score of 3.71. Other dimensions of support fall within the range of 3.14 to 3.43.

Continuing respondents' facility-related characteristics reveal that most reside in urban locales, comprising 62.8% of the sample. Regarding transportation to campus, 62.1% opt for motorcycles due to considerable distances, which fall within the range of 10 - 15 km. An overwhelming majority benefit from

stable and fast internet access (75.9%), with 87.2% incurring monthly internet costs ranging from IDR 50,000 to IDR 100,000. Analysis also indicates that the majority (65.6%) encounter no difficulties accessing computers and the internet. Additionally, an ample portion (81.9%) possess adequate ICT access through smartphones (99.5%) or computers (88.9%) for academic pursuits. The analysis further underscores extensive computer usage among respondents, extending beyond campus environments.

Table 2. Description of Social Characteristics of Respondents

Family Characteristics	N	%	Individual Characteristics	N	%
Parent's Education: Completed High School	284	71.30	Male	92	23.10
Parent's Education: Diploma	20	5.00	Female	306	76.90
Parent's Education: Bachelor's Degree	82	20.60	Age: < 20 yo	86	21.60
Parent's Education: Postgraduate Degree	12	3.00	Age: 20 – 24 yo	281	70.70
Parent's Occupation: Farmer/Fisherman	89	22.40	Age: 25 – 29 yo	16	4.00
Parent's Occupation: Private Employee	63	15.80	Age: >30 yo	15	3.80
Parent's Occupation: Civil Servant/Military/Police	41	10.30			
Family Characteristics	N	%	Facility Characteristics	N	%
Parent's Occupation: Teacher/Lecturer	11	2.80	Urban Residence	250	62.80
Parent's Occupation: Entrepreneur	119	29.90	Suburban Residence	67	16.80
The parent has a pension	33	8.30	Rural Residence	81	20.40
Parent's Occupation: Others: Housewife, Labor	42	10.60	Distance from Campus Less than 5 km	83	20.90
No Family Dependents	21	5.30	Distance from Campus 5- 10 km	94	23.60
Number of Family Dependents: 1-2 People	191	48.00	Distance from Campus 10- 15 km	61	15.30
Number of Family Dependents: 3-4 People	149	37.40	Distance from Campus more than 15 km	160	40.20
Number of Family Dependents: 5 People or more	37	9.30	Access to Campus via Public Transport	73	18.30
Parent's Income: Less than 5 million	257	64.60	Access to Campus via Motorcycle	247	62.10
Parent's Income: 5 – 10 million	93	23.40	Access to Campus via Car	24	6.00
Parent's Income: 10 – 15 million	24	6.00	Access to Campus via Bicycle	2	0.50
Parent's Income: 15 - 20 million	6	1.50	Access to Campus via Online-based Vehicle	18	4.50
Parent's Income: more than 20 million	18	4.60	Access to Campus on Foot	34	8.50
			Adequate Internet Access	302	75.90
Campus Characteristics	N	%	Facility Characteristics	N	%
Attended Public University	189	47.50	Unstable Internet Access	89	22.40
Attended Private University	209	52.50	No Internet Access	7	1.80
Accreditation of Study Program: C or Good	31	7.80	Internet Connection via Cable	4	1.00
Accreditation of Study Program: B or Very Good	237	59.50	Internet Connection via Mobile Data	173	43.50
Accreditation of Study Program: A or Excellent	130	32.70	Internet Connection via WiFi	214	53.80
Accreditation of University: C or Good	47	11.80	Pay a Monthly Fee for Internet Access	347	87.20
Accreditation of University: B or Very Good	279	70.10	No Monthly Fee for Internet Access	44	11.10
Accreditation of University: A or Excellent	72	18.10	Average Monthly Cost for Internet Access	Rp. 50 - 100rb	

Quality of teaching of computer technology	Mean	Hindered by Computer and Internet Access	137	34.40
Effect of Campus Support on Digital Skills	3.14	Not Hindered by Computer and Internet Access	261	65.60
Teaching Using Information Technology (IT)	3.28	Has Smartphone for Academic Purposes	396	99.50
Effectiveness of Teaching Using IT	3.43	Does Not Have a Smartphone for Academic Purposes	2	0.50
IT-based Course	2.97	Has a Computer or Laptop for Academic Purposes	354	88.90
Quality of Teaching Using IT	4.00	Does Not Have a Computer or Laptop for Academic Purposes	44	11.10
Learning Outcomes of IT on Campus	3.71	Adequate IT Access to Develop Digital Skills	326	81.90
Availability of IT Infrastructure	2.96	Inadequate access to ICT for developing digital skills	72	18.10
		Average Computer Use Outside Campus		Almost Every Day

Lastly, an all-encompassing depiction of respondents' competence in ICT applications is presented in Table 3. The data analysis outcomes reveal a proficient grasp of various application types, with the most remarkable expertise observed in word processing applications (score of 4.2) and presentation software (score of 4.11). Conversely, the lowest scores were linked to using accounting software (score of 3.41) and spreadsheets (score of 3.42). These findings shed light on the imperative need for curriculum enhancements concerning accounting software and spreadsheet applications within the context of the accounting program.

Table 3. Description of Respondents' Digital Competencies

Mastery of Applications	Mean
Spreadsheet	3.42
Presentation	4.11
Accounting Software	3.41
Word Processing	4.20
Data Security	3.87
Others Application	3.74

Next is the discussion addressing the research question of whether the social factors elucidated through individual, family, campus, and facility characteristics influence the digital competence of accounting students. First, Individual Characteristics and Students' Digital Competence. Examining the first research question reveals a significant impact of individual characteristics, particularly age, on students' digital competence ($t = -2.006, p = 0.046$). The results suggest that younger students possess a higher level of digital competence than their older counterparts. On the other hand, gender does not significantly affect digital competence, as indicated by the analysis ($t = 0.123, p = 0.902$). Second, Family Characteristics and Students' Digital Competence. Investigating the second research question sheds light on the influential role of family characteristics on students' digital competence. Specifically, parental education level impacts students' digital competence significantly ($t = 2.113, p = 0.035$), implying that higher parental education corresponds to heightened student digital competence. Similarly, the occupation of parents is associated with students' digital competence ($t = 1.902, p = 0.058$). Furthermore, the number of family dependents ($t = -1.805, p = 0.072$) and parental income ($t = 1.921, p = 0.056$) significantly affect students' digital competence. Third, Facility Characteristics and Students' Digital Competence. Addressing the third research question, the analysis emphasizes the impact of computer ownership on students' digital competence ($t = 1.838, p = 0.067$). Possession of a personal computer relates to improved digital competence among students. However, other facility characteristics did not yield statistically significant results (refer to the

appendix). Fourth, Campus Characteristics and Students' Digital Competence. Exploring the fourth research question reveals that specific campus characteristics significantly influence students' digital competence. Parameters such as instructors' use of ICT for teaching, the effectiveness of ICT-based education, and learning outcomes in ICT demonstrate significant impacts on digital competence. Conversely, factors like campus support, ICT-based courses, quality of ICT-based teaching, and availability of ICT infrastructure do not significantly affect students' digital competence.

The findings underscore the intricate interplay between social factors encompassing individual, family, campus, and facility characteristics in shaping students' digital competence. These insights hold significant implications for educational institutions aiming to enhance digital competency among accounting students.

Discussion

The analysis of the collected data underscores the significant impact of the digital divide, primarily influenced by various social factors, on the digital competence of students. Notably, individual characteristics, particularly age, emerge as a defining factor in shaping digital competence, while gender appears to have a less pronounced effect. This finding highlights a compelling trend where younger students tend to exhibit a notably higher level of digital competence compared to their older counterparts, regardless of gender. This observation is consistent with the results of a 2021 survey conducted by Katadata Insight Center (KIC) in collaboration with the Ministry of Communication and Information Technology (Kominfo). The 2021 survey by Katadata Insight Center, in partnership with the Ministry of Communication and Information Technology (Kominfo), emphasized the digital literacy proficiency of younger generations. This proficiency can be attributed to their innate familiarity and adeptness with digital technology, given that they have grown up in an era characterized by pervasive digital technology use. As a result, younger individuals are naturally more inclined to adapt to and harness technological advancements for their success and overall progress (Logunova, 2017; Yefanov et al., 2020).

These findings indicate a broader societal trend where age plays a pivotal role in shaping digital competence, and younger individuals have a significant advantage in navigating the digital landscape (Chambers & Sandford, 2018; Robinson et al., 2015). This has significant implications for educational strategies, workforce readiness, and the development of policies to bridge the digital divide, ultimately ensuring that individuals of all ages can fully participate in and benefit from the digital age. These results are also in line with the concept of connectivism. Connectivism is a theory that aptly explains variations in digital competence between younger and older generations (Apostolidou, 2022; Knox, 2014). In the context of digital competence, younger generations exhibit a higher level of technological proficiency, primarily due to their upbringing in highly interconnected digital environments.

This younger generation grows up in an environment characterized by social and technological interconnectedness, which facilitates knowledge sharing, collaboration, and easy access to support (Battistella et al., 2016; Wagner et al., 2014). They are immersed in a world where technology, such as smartphones, computers, the internet, and social media, is omnipresent (Al Saifi, 2015; Dyer et al., 2018). This constant exposure results in an ingrained familiarity and proficiency with these digital tools. Furthermore, the regular engagement with technology fosters a continuous learning environment. This environment allows for the swift acquisition and constant updating of digital knowledge and skills, as individuals learn through online resources, interact with peers across the globe, and adapt to the evolving digital landscape (Haleem et al., 2022; Koskelainen et al., 2023; Shonfeld et al., 2021).

In contrast, older generations may require more exposure to technology and face challenges in keeping pace with rapid technological shifts and adapting to the constantly evolving digital landscape (Quach et al., 2022; Saykili, 2019). The theory of connectivism helps shed light on the underlying factors that contribute to this disparity in digital competence. It highlights the crucial role of the digital environment in shaping individuals' digital skills and underscores the need for educational strategies and initiatives that support lifelong learning and digital skill development for people of all ages (Bennett & McWhorter, 2021; Khasawneh, 2024).

Next, the influence of family characteristics on students' digital competence comes to light. The findings underscore that family-related aspects, such as parental education level, parental occupation, family dependents, and parental income, significantly improve students' digital competence (Lafton et al., 2022; Ren et al., 2022). Financial factors within the family context contribute to the observed variation in students' digital competence levels. This emphasizes how differing family financial circumstances, contributing to the digital divide, impact students' digital access (Dolan, 2016; Lythreathis et al., 2022). Adequate parental education positively correlates with students' digital access, as does parental occupation. The number of dependents and income each affect students' digital proficiency differently. These results align with the Theory of Planned Behavior (TPB), where the family environment as a subjective norm

influences intentions to enhance individual skills. The understanding is that digital proficiency is closely tied to information technology (IT) infrastructure availability. Parental awareness, influenced by education and household finances, impacts students' IT access, subsequently affecting their digital competence (Cabello-Hutt et al., 2018; Yan, D., & Li, 2023). Family and household financial conditions are pivotal in facilitating access to and utilization of IT tools.

Furthermore, the influence of facility characteristics becomes apparent, with testing revealing that only one facility aspect—computer ownership—significantly contributes to students' perceived levels of digital competence (Lucas et al., 2021; Ramírez-Montoya et al., 2017). This result reinforces the notion that limited facilities, especially computer access, affect students' digital proficiency (Mohammadyari & Singh, 2015; Seale et al., 2015). Computers serve as crucial tools for students to access information and master various applications for educational purposes. Computer ownership plays a pivotal role in influencing students' digital competence. This aligns with the previous research, illustrating the impact of Technology Information and Communication (TIC) access and usage on students' digital proficiency during learning (Ben Youssef et al., 2022; Claro et al., 2018). This finding supports that social status-related digital divides, particularly computer ownership, significantly influence students' digital access and competence (Lindblom & Räsänen, 2017; Scherer & Siddiq, 2019). As a result, students with computer access who actively engage in learning exhibit better digital competency. Hence, educational systems must ensure equitable access to computers and TIC, integrating them into the curriculum to enhance students' digital capabilities. Computer ownership becomes a crucial catalyst in shaping a competent generation capable of addressing the challenges of the ever-evolving digital landscape.

These findings indicate that campuses providing skilled instructors for TIC-based teaching, effective TIC-based learning, and favorable TIC learning outcomes positively impact students' digital competence. The pivotal role of instructors in the TIC learning process becomes essential in enhancing students' abilities within the digital era. Moreover, this discovery gains even more significance in the context of the pandemic, where many lectures are conducted online, and students learn from their respective locations (Al-Kumaim et al., 2021; Lapitan Jr et al., 2021). Campus facilities such as digital skill support, quality TIC infrastructure, and other provisions may not significantly contribute to students' digital competence during this period. Conversely, the instructors' capability to teach effectively using TIC becomes highly valuable in addressing challenges posed by remote learning during the pandemic. The infrastructure students use is their own, highlighting the growing importance of instructors as competent facilitators and educators in the digital environment. Therefore, these findings emphasize that campuses must enhance instructors' TIC teaching skills to ensure maximum contributions to students' digital competence (Mirete et al., 2020; Pérez-Navío et al., 2021). Additionally, an adaptive approach to pandemic conditions and adjusting learning strategies are vital in ensuring students maintain relevant and dependable digital skills in the current digital age.

In this study, the assessment of students' digital competence revolves around their proficiency in using various applications, including those for presentation, word processing, spreadsheets, accounting software, and data security (Daff, 2021; Sparks et al., 2016). These digital skills are essential in today's technologically driven world, particularly in the context of academic and professional success. The research findings shed light on the significant influence of facility characteristics, such as computer ownership, and family-related factors, including support and financial conditions, in facilitating students' access to information technology and communication tools. These findings highlight the complex interplay between personal resources and family environments in shaping students' digital competence (Caena & Redecker, 2019; Kärnä et al., 2022).

The presence of a personal computer or access to one can greatly affect a student's ability to develop digital competence (Falloon, 2020; Porat et al., 2018). Students who have consistent access to a computer are more likely to engage with technology regularly and, as a result, enhance their digital skills. In contrast, those without such access may face challenges in building and maintaining digital competencies. Next, family plays a crucial role in providing support and encouragement for students to explore and master digital tools. Supportive family environments can offer resources, guidance, and a conducive atmosphere for skill development. Conversely, students lacking familial support may find it more challenging to acquire digital competencies. Then, Financial conditions within a family can impact a student's access to technology and educational resources. Families with greater financial resources may invest in digital devices and educational software, providing students with opportunities to enhance their digital competence (De León et al., 2023; Pagani et al., 2016). Conversely, financial constraints can limit a student's access to these resources.

Furthermore, the role of instructors as facilitators of TIC-based teaching becomes increasingly crucial. Instructors' ability to facilitate learning using digital technology contributes positively to students' digital competence. Instructors who effectively teach with TIC help enhance students' ability to adapt and

use technology for academic purposes. Hence, this study offers a clear perspective on how specific factors, like campus characteristics and instructors' role in TIC-based teaching, can influence students' digital competence (Ilham et al., 2023; Wan & Niu, 2019). This is highly relevant in the digital divide context, where these aspects can be focal points in addressing technology access and digital competence disparities among students. Efforts from educational institutions are necessary to ensure equal access and opportunities for all students in developing the essential digital skills required in our increasingly interconnected and digitalized world.

The implications of this research highlight the critical need for equal access to technology and the role of lecturers in leveraging digital technology in teaching. This study significantly contributes to understanding the impact of the digital divide from social dimensions on the digital competence of accounting students. The novelty of this study lies in its unique approach to examining the digital divide in relation to digital competence. While prior research predominantly focused on social and economic factors as key determinants of the digital divide, our study introduces a fresh perspective. This study goes beyond conventional socio-economic analyses to explore how the digital divide is related to digital competence. This research stands out by considering factors beyond the traditional social and economic aspects, delving into the nuanced interplay between the digital divide and digital competence. This approach offers a comprehensive understanding of how these two elements are interconnected and provides insights into the dynamics of digital inequality that extend beyond previously explored dimensions. In essence, our study contributes to the existing body of research by offering a more holistic and nuanced view of the digital divide, shedding light on previously unexplored facets of its relation to digital competence. This novelty paves the way for a deeper understanding of the challenges and opportunities in bridging the digital divide in the contemporary digital landscape.

4. CONCLUSION

This study demonstrates the presence of a digital divide influenced by social dimensions that impact the digital competence of accounting students. Social factors such as age groups, parental education levels, parental occupations, family dependents, parental income, computer ownership, and campus characteristics contribute to students' digital competence. The research findings provide clear insights into how specific factors, like campus characteristics and the role of lecturers in ICT-based teaching, can influence students' digital competence.

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6. REFERENCES

- Adam, I. O., & Dzang Alhassan, M. (2021). Bridging the global digital divide through digital inclusion: the role of ICT access and ICT use. *Transforming Government: People, Process and Policy*, 15(4), 580–596. <https://doi.org/10.1108/TG-06-2020-0114>.
- Ajzen, I. (2020). The theory of planned behavior: Frequently asked questions. *Human behavior and emerging technologies*, 2(4), 314–324. <https://doi.org/10.1002/hbe2.195>.
- Al-Kumaim, N. H., Alhazmi, A. K., Mohammed, F., Gazem, N. A., Shabbir, M. S., & Fazea, Y. (2021). Exploring the Impact of the COVID-19 Pandemic on University Students' Learning Life: An Integrated Conceptual Motivational Model for Sustainable and Healthy Online Learning. *Sustainability*, 13(5), 2546. <https://doi.org/10.3390/su13052546>.
- Al Mallak, M. A., Tan, L. M., & Laswad, F. (2020). Generic skills in accounting education in Saudi Arabia: students' perceptions. *Asian Review of Accounting*, 28(3), 395–421. <https://doi.org/10.1108/ARA-02-2019-0044>.
- Al Saifi, S. A. (2015). Positioning organisational culture in knowledge management research. *Journal of knowledge management*, 19(2), 164–189. <https://doi.org/10.1108/JKM-07-2014-0287>.
- Ali, I. M., Kamarudin, K., Suriani, N. A., Saad, N. Z., & Afandi, Z. A. M. (2016). Perception of employers and educators in accounting education. *Procedia Economics and Finance*, 35, 54–63. [https://doi.org/10.1016/S2212-5671\(16\)00009-5](https://doi.org/10.1016/S2212-5671(16)00009-5).
- Apostolidou, A. (2022). Digitally situated knowledge: Connectivism, anthropology and epistemological pluralism. *International Journal of Educational Research*, 115.

- <https://doi.org/10.1016/j.ijer.2022.102047>.
- Aryanti, C., & Adhariani, D. (2020). Students' perceptions and expectation gap on the skills and knowledge of accounting graduates. *The Journal of Asian Finance, Economics and Business*, 7(9), 649–657. <https://doi.org/10.13106/jafeb.2020.vol7.no9.649>.
- Battistella, C., De Toni, A. F., & Pillon, R. (2016). Inter-organisational technology/knowledge transfer: a framework from critical literature review. *The Journal of Technology Transfer*, 41, 1195–1234. <https://doi.org/10.1007/s10961-015-9418-7>.
- Ben Youssef, A., Dahmani, M., & Ragni, L. (2022). ICT Use, Digital Skills and Students' Academic Performance: Exploring the Digital Divide. *Information*, 13(3), 129. <https://doi.org/10.3390/info13030129>.
- Bennett, E. E., & McWhorter, R. R. (2021). Virtual HRD's role in crisis and the post Covid-19 professional lifeworld: Accelerating skills for digital transformation. *Advances in Developing Human Resources*, 23(1), 5–25. <https://doi.org/10.1177/1523422320973288>.
- Cabello-Hutt, T., Cabello, P., & Claro, M. (2018). Online opportunities and risks for children and adolescents: The role of digital skills, age, gender and parental mediation in Brazil. *new media & society*, 20(7), 2411–2431. <https://doi.org/10.1177/1461444817724168>.
- Caena, F., & Redecker, C. (2019). Aligning teacher competence frameworks to 21st century challenges: The case for the European Digital Competence Framework for Educators (Digcompedu). *European journal of education*, 54(3), 356–369. <https://doi.org/10.1111/ejed.12345>.
- Chambers, F., & Sandford, R. (2018). Learning to be human in a digital world: a model of values fluency education for physical education. *Sport, Education and Society*, 24(9), 925–938. <https://doi.org/10.1080/13573322.2018.1515071>.
- Chetty, K., Qigui, L., Gcora, N., Josie, J., Wenwei, L., & Fang, C. (2018). Bridging the digital divide: Measuring digital literacy. *Economics*, 12(1), 1–20. <https://doi.org/10.5018/economics-ejournal.ja.2018-23>.
- Claro, M., Salinas, Á., Cabello-Hutt, T., San Martín, E., Preiss, D. D., Valenzuela, S., & Jara, I. (2018). Teaching in a Digital Environment (TIDE): Defining and measuring teachers' capacity to develop students' digital information and communication skills. *Computers & Education*, 121, 162–174. <https://doi.org/10.1016/j.compedu.2018.03.001>.
- Daff, L. (2021). Employers' perspectives of accounting graduates and their world of work: Software use and ICT competencies. *Accounting Education*, 30(5), 495–524. <https://doi.org/10.1080/09639284.2021.1935282>.
- De León, L., Corbeil, R., & Corbeil, M. E. (2023). The development and validation of a teacher education digital literacy and digital pedagogy evaluation. *Journal of Research on Technology in Education*, 55(3), 477–489. <https://doi.org/10.1080/15391523.2021.1974988>.
- Dolan, J. E. (2016). Splicing the divide: A review of research on the evolving digital divide among K–12 students. *Journal of Research on Technology in Education*, 48(1), 16–37. <https://doi.org/10.1080/15391523.2015.1103147>.
- Dyer, J. H., Singh, H., & Hesterly, W. S. (2018). The relational view revisited: A dynamic perspective on value creation and value capture. *Strategic management journal*, 39(12), 3140–3162. <https://doi.org/10.1002/smj.2785>.
- Falloon, G. (2020). From digital literacy to digital competence: the teacher digital competency (TDC) framework. *Educational Technology Research and Development*, 68(5), 2449–2472. <https://doi.org/10.1007/s11423-020-09767-4>.
- Fox, G., & Connolly, R. (2018). Mobile health technology adoption across generations: Narrowing the digital divide. *Information Systems Journal*, 28(6), 995–1019. <https://doi.org/10.1111/isj.12179>.
- Habibi, A., Yaakob, M. F. M., Mukminin, A., Muhaimin, M., Prasojo, L. D., Yusop, F. D., & Muzakkir, M. (2021). Teachers' digital technology access to motivation, skills and use: a structural equation modeling study. *Aslib Journal of Information Management*, 73(4), 543–559. <https://doi.org/10.1108/AJIM-11-2020-0382>.
- Hadi, A. (2018). Bridging Indonesia's Digital Divide: Rural-Urban Linkages? *Jurnal Ilmu Sosial dan Ilmu Politik*, 22(1), 17–33. <https://doi.org/10.22146/jsp.31835>.
- Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers*, 3, 275–285. <https://doi.org/10.1016/j.susoc.2022.05.004>.
- Hilbert, M. (2014). Technological information inequality as an incessantly moving target: The redistribution of information and communication capacities between 1986 and 2010. *Journal of the Association for Information Science and Technology*, 65(4), 821–835. <https://doi.org/10.1002/asi.23020>.
- Ilham, M., Sari, D. D., Sundana, L., Rahman, F., Akmal, N., & Fazila, S. (2023). *Media Pembelajaran: Teori, Implementasi, dan Evaluasi*. Jejak Pustaka.
- Kaarakainen, M. T., Kaarakainen, S. S., & Kivinen, A. (2018). Seeking Adequate Competencies for the Future.

- Nordic journal of science and technology studies*, 6(1), 4–20.
<https://doi.org/10.5324/njsts.v6i1.2520>.
- Kärnä, E., Aavikko, L., Rohner, R., Gallistl, V., Pihlainen, K., Müller, C., & Korjonen-Kuusipuro, K. (2022). A Multilevel Model of Older Adults' Appropriation of ICT and Acquisition of Digital Literacy. *International Journal of Environmental Research and Public Health*, 19(23).
<https://doi.org/10.3390/ijerph192315714>.
- Khasawneh, M. (2024). Beyond digital platforms: Gamified skill development in real-world scenarios and environmental variables. *International Journal of Data and Network Science*, 8(1), 213–220.
<https://doi.org/10.5267/j.ijdns.2023.10.002>.
- Kim, H. J., Hong, A. J., & Song, H. D. (2018). The relationships of family, perceived digital competence and attitude, and learning agility in sustainable student engagement in higher education. *Sustainability* (Switzerland), 10(12). <https://doi.org/10.3390/su10124635>.
- Knox, J. (2014). Digital culture clash: "massive" education in the E-learning and Digital Cultures MOOC. *Distance Education*, 35(2), 164–177. <https://doi.org/10.1080/01587919.2014.917704>.
- Koskelainen, T., Kalmi, P., Scornavacca, E., & Vartiainen, T. (2023). Financial literacy in the digital age—A research agenda. *Journal of Consumer Affairs*, 57(1), 507–528. <https://doi.org/10.1111/joca.12510>
- Lafton, T., Holmarsdottir, H. B., Kapella, O., Sisask, M., & Zinoveva, L. (2022). Children's vulnerability to digital technology within the family: A scoping review. *Societies*, 13(1), 11.
<https://doi.org/10.3390/soc13010011>.
- Lapitan Jr, L. D., Tiangco, C. E., Sumalinog, D. A. G., Sabarillo, N. S., & Diaz, J. M. (2021). An effective blended online teaching and learning strategy during the COVID-19 pandemic. *Education for Chemical Engineers*, 35, 116–131. <https://doi.org/10.1016/j.ece.2021.01.012>.
- Lindblom, T., & Räsänen, P. (2017). Between class and status? Examining the digital divide in Finland, the United Kingdom, and Greece. *The Information Society*, 33(3), 147–158.
<https://doi.org/10.1080/01972243.2017.1294124>.
- Logunova, O. (2017). Data vs. big data: methodic experiments and research ethics in project 'Index of Digital Literacy'. *Russian Journal of Communication*, 9(3), 303–304.
<https://doi.org/10.1080/19409419.2017.1376567>.
- Lucas, M., Bem-Haja, P., Siddiq, F., Moreira, A., & Redecker, C. (2021). The relation between in-service teachers' digital competence and personal and contextual factors: What matters most? *Computers & Education*, 160. <https://doi.org/10.1016/j.compedu.2020.104052>.
- Lythreatis, S., Singh, S. K., & El-Kassar, A. N. (2019). The digital divide: A review and future research agenda. *Technological Forecasting and Social Change*, 175.
<https://doi.org/10.1016/j.techfore.2021.121359>.
- Lythreatis, S., Singh, S. K., & El-Kassar, A. N. (2022). The digital divide: A review and future research agenda. *Technological Forecasting and Social Change*, 175.
<https://doi.org/10.1016/j.techfore.2021.121359>.
- Mah'd, O. A., & Mardini, G. H. (2022). The quality of accounting education and the integration of the international education standards: evidence from Middle Eastern and North African countries. *Accounting Education*, 31(2), 113–133. <https://doi.org/10.1080/09639284.2020.1790020>.
- Mameche, Y., Omri, M. A., & Hassine, N. (2020). Compliance of accounting education programs with International Accounting Education Standards: The case of IES 3 in Tunisia. *Eurasian Journal of Educational Research*, 20(85), 225–246.
- Mathrani, A., Sarvesh, T., & Umer, R. (2022). Digital divide framework: online learning in developing countries during the COVID-19 lockdown. *Globalisation, Societies and Education*, 20(5), 625–640.
<https://doi.org/10.1080/14767724.2021.1981253>.
- Mirete, A. B., Maquilón, J. J., Mirete, L., & Rodríguez, R. A. (2020). Digital Competence and University Teachers' Conceptions about Teaching. A Structural Causal Model. *Sustainability*, 12(12).
<https://doi.org/10.3390/su12124842>.
- Mohammadyari, S., & Singh, H. (2015). Understanding the effect of e-learning on individual performance: The role of digital literacy. *Computers & Education*, 82, 11–25.
<https://doi.org/10.1016/j.compedu.2014.10.025>.
- Mulyaningsih, T., Wahyunengseh, R., & Hastjarjo, S. (2020). Poverty and digital divide: A study in urban poor neighborhoods. *Jurnal Ilmu Sosial dan Ilmu Politik*, 24(2), 189–203.
<https://doi.org/10.22146/jsp.52325>.
- Muthaiyah, S., Phang, K., & Sembakutti, S. (2021). Bridging skill gaps and creating future ready accounting and finance graduates: An exploratory study. *F1000Research*, 10(892), 1–13.
<https://doi.org/10.12688/f1000research.72880.1>.
- Pagán, F. J. B., Martínez, J. L., & Máiquez, M. C. C. (2018). Internet use by secondary school students: A digital

- divide in sustainable societies? *Sustainability (Switzerland)*, 10(10). <https://doi.org/10.3390/su10103703>.
- Pagani, L., Argentin, G., Gui, M., & Stanca, L. (2016). The impact of digital skills on educational outcomes: evidence from performance tests. *Educational studies*, 42(2), 137–162. <https://doi.org/10.1080/03055698.2016.1148588>.
- Pawluczuk, A., Lee, J., & Gamundani, A. M. (2021). Bridging the gender digital divide: an analysis of existing guidance for gender digital inclusion programmes' evaluations. *Digital Policy, Regulation and Governance*, 23(3), 287–299. <https://doi.org/10.1108/DPRG-11-2020-0158>.
- Pérez-Navío, E., Ocaña-Moral, M. T., & Martínez-Serrano, M. D. C. (2021). University Graduate Students and Digital Competence: Are Future Secondary School Teachers Digitally Competent? *Sustainability*, 13(15). <https://doi.org/10.3390/su13158519>.
- Phan, D., Yapa, P., & Nguyen, H. T. (2020). Accounting graduate readiness for work: a case study of South East Asia. *Education and Training*, 63(3), 392–416. <https://doi.org/10.1108/ET-02-2019-0036>.
- Porat, E., Blau, I., & Barak, A. (2018). Measuring digital literacies: Junior high-school students' perceived competencies versus actual performance. *Computers & Education*, 126, 23–36. <https://doi.org/10.1016/j.compedu.2018.06.030>.
- Puspitasari, L., & Ishii, K. (2016). Bridging the digital divide in Indonesia. *Telematics and informatics*, 33(2), 472–483. <https://doi.org/10.1016/j.tele.2015.11.001>.
- Qi, Y., Sun, Y., Zhang, Z., Shi, Y., & Liu, L. (2023). The digital economy—technologies, trends, and influences. *Personal and Ubiquitous Computing*, 27(4), 1521–1523. <https://doi.org/10.1007/s00779-023-01734-z>.
- Quach, S., Thaichon, P., Martin, K. D., Weaven, S., & Palmatier, R. W. (2022). Digital technologies: Tensions in privacy and data. *Journal of the Academy of Marketing Science*, 50(6), 1299–1323. <https://doi.org/10.1007/s11747-022-00845-y>.
- Rahardjo, D., Lubis, D. P., & Harijati, I. S. (2016). Internet Access And Usage In Improving Students' Self-Directed Learning In Indonesia Open University. *Turkish Online Journal of Distance Education*, 17(2). <https://doi.org/10.17718/tojde.90196>.
- Ramírez-Montoya, M. S., Mena, J., & Rodríguez-Arroyo, J. A. (2017). In-service teachers' self-perceptions of digital competence and OER use as determined by a xMOOC training course. *Computers in Human Behavior*, 77, 356–364. <https://doi.org/10.1016/j.chb.2017.09.010>.
- Ren, W., Zhu, X., & Yang, J. (2022). The SES-based difference of adolescents' digital skills and usages: An explanation from family cultural capital. *Computers & Education*, 177. <https://doi.org/10.1016/j.compedu.2021.104382>.
- Robinson, L., Cotten, S. R., Ono, H., Quan-Haase, A., Mesch, G., Chen, W., & Stern, M. J. (2015). Digital inequalities and why they matter. *Information, communication & society*, 18(5), 569–582. <https://doi.org/10.1080/1369118X.2015.1012532>.
- Roy, S. (2022). Graduate readiness for a professional career in accounting—an investigation of employers' perspectives in Fiji. *Pacific Accounting Review*, 35(2), 314–335. <https://doi.org/10.1108/PAR-06-2021-0087>.
- Saykili, A. (2019). Higher education in the digital age: The impact of digital connective technologies. *Journal of Educational Technology and Online Learning*, 2(1), 1–15. <https://doi.org/10.31681/jetol.516971>
- Scherer, R., & Siddiq, F. (2019). The relation between students' socioeconomic status and ICT literacy: Findings from a meta-analysis. *Computers & Education*, 138, 13–32. <https://doi.org/10.1016/j.compedu.2019.04.011>.
- Seale, J., Georgeson, J., Mamas, C., & Swain, J. (2015). Not the right kind of 'digital capital'? An examination of the complex relationship between disabled students, their technologies and higher education institutions. *Computers & Education*, 82, 118–128. <https://doi.org/10.1016/j.compedu.2014.11.007>.
- Shin, S. Y., Kim, D., & Chun, S. A. (2021). Digital divide in advanced smart city innovations. *Sustainability (Switzerland)*, 13(7). <https://doi.org/10.3390/su13074076>.
- Shonfeld, M., Cotnam-Kappel, M., Judge, M., Ng, C. Y., Ntebutse, J. G., Williamson-Leadley, S., & Yildiz, M. N. (2021). Learning in digital environments: a model for cross-cultural alignment. *Educational Technology Research and Development*, 69, 2151–2170. <https://doi.org/10.1007/s11423-021-09967-6>.
- Sparks, J. R., Katz, I. R., & Beile, P. M. (2016). Assessing digital information literacy in higher education: A review of existing frameworks and assessments with recommendations for next-generation assessment. *ETS Research Report Series*, 2016(2), 1–33. <https://doi.org/10.1002/ets2.12118>
- Sussman, R., & Gifford, R. (2019). Causality in the theory of planned behavior. *Personality and Social Psychology Bulletin*, 45(6), 920–933. <https://doi.org/10.1177/0146167218801363>.

- Torres-Díaz, J. C., M Duart, J., Gómez-Alvarado, H. F., Marín-Gutiérrez, I., & Segarra-Faggioni, V. (2016). Internet Use and Academic Success in University Students. *Comunicar: Revista Científica de Comunicación y Educación*, 24(48), 61–70. <https://doi.org/10.3916/C48-2016-06>.
- Van De Werfhorst, H. G., Kessenich, E., & Geven, S. (2022). The digital divide in online education: Inequality in digital readiness of students and schools. *Computers and Education Open*, 3. <https://doi.org/10.1016/j.caeo.2022.100100>.
- van Kessel, R., Wong, B. L. H., Rubinić, I., O’Nuallain, E., & Czabanowska, K. (2022). Is Europe prepared to go digital? making the case for developing digital capacity: An exploratory analysis of Eurostat survey data. *PLOS Digital Health*, 1(2). <https://doi.org/10.1371/journal.pdig.0000013>.
- Vassilakopoulou, P., & Hustad, E. (2021). Bridging Digital Divides: a Literature Review and Research Agenda for Information Systems Research. *Information Systems Frontiers*, 25(3), 955–969. <https://doi.org/10.1007/s10796-020-10096-3>.
- Wagner, D., Vollmar, G., & Wagner, H. T. (2014). The impact of information technology on knowledge creation: An affordance approach to social media. *Journal of Enterprise Information Management*, 27(1), 31–44. <https://doi.org/10.1108/JEIM-09-2012-0063>.
- Wan, S., & Niu, Z. (2019). A hybrid e-learning recommendation approach based on learners’ influence propagation. *IEEE Transactions on Knowledge and Data Engineering*, 32(5), 827–840. <https://doi.org/10.1109/TKDE.2019.2895033>.
- Winardi, R. D., & Anggraeni, M. A. (2017). Academic dishonesty among accounting students: Some Indonesian evidence. *Jurnal Akuntansi Dan Keuangan Indonesia*, 14(2), 2. <https://doi.org/10.21002/jaki.2017.08>.
- Yan, D., & Li, G. (2023). A heterogeneity study on the effect of digital education technology on the sustainability of cognitive ability for middle school students. *Sustainability*, 15(3). <https://doi.org/10.3390/su15032784>.
- Yefanov, A. A., Budanova, M. A., & Yudina, E. N. (2020). Digital literacy of schoolchildren and teachers: A comparative analysis. *RUDN Journal of Sociology*. <https://doi.org/10.22363/2313-2272-2020-20-2-382-393>.