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Bridging Innovation Gap and Technology Transfer in Managing Public Organizations

Ugochukwu Okwudili Matthew

Abstract:
The benefits of the digital workplace technology applications, and their potential shortcoming have all been brought into sharp view by an intensification of digital employees pushed by Covid-19 outbreak. In this paper, the authors discussed how digital automation is changing workplace cultures, along with how employee users in an academic setting are utilizing computers and other digital technologies. The digital experiences of today's society have provided justification of how people use modern computers and how they affect our daily lives as a whole. In order to understand how individual experiences with technology use occur, it is necessary to look into human-computer interactions that deal with knowledge, experiences, and technology use. High levels of negative experiences were found in our study of 137 female and 107 male workplace computer users. Primary and secondary sources were used to collect the survey's data. Using frequency percentage tables, descriptive statistics, and SPSS to test the hypothesis, the acquired data were examined using Chi-Square distribution. The research's conclusions indicated a high level of feminist gender frustrations because some users suffer loss of control and bad emotions when faced with digital frustrations.

Keywords: Computer Experiences, Human Computer Interaction, User Frustration, Knowledge Divide, ICT, Digital Interactivity, Digital Divide

INTRODUCTION

Digital computing experiences are a global phenomenon arising from people's desire to employ contemporary technologies to fulfill their day-to-day computing requirements in the working places (Iqbal, Doctor, More, Mahmud, & Yousuf, 2020). The demand for information communication technologies (ICTs) based development is a universal issue that has long been and will continue to be of enormous importance to all humankind, steering discussions on matters of public importance. The ICTs are the computers, software, networks, satellite linkages, and related systems that enable people to access, analyze, produce, share, and use data, information, and knowledge in ways that were previously unthinkable. The widespread adoption of ICTs and their quick development have shifted human society from the information era to the knowledge driven economy in nearly all fields. Digital technologies are fundamentally altering the topologies of organizational work cultures through increased automation, which has encouraged new work ethics and a well-organized value chain that have resulted in productivity(Barakabitze et al., 2019). Previous investigations into how technology is affecting modern workplaces have mostly focused on the physical limitations of digital automations and have heavily considered both the workplace environment as being immovable and technology as being exogenously dynamic (Jain & Srinivasan, 2018).

While recent developments involving digital automation have had a significant impact on the technology sector, other economic sectors have also benefited fairly from the diffusion of new technology. The ongoing digital automation of the working environment and the integration of digital technology into many economic sectors signify economic transactions through digital

networks of cutting-edge technologies for process modernity(Hassan, 2020). Given the socioeconomic dynamics and how deeply ingrained production technologies are in organizational social structures, the introduction of new technologies will initially face resistance from preexisting institutional configurations, vested interests, and organizational arrangements(Sweet & Meiksins, 2020). The same organizational structures, interests, and institutions, on the other hand, will adapt to the distribution of technology and subsequently advance the development of the novel technologies once the first digital resistance is overcome. In this way, the digital revolution will stand in for the series of irregular spurts of novel changes, tools, and processes used in the larger economy(Frey, 2020).

On the organizational job allocation and individual performances, the early workplace automation will have far-reaching effects(Arntz, Gregory, & Zierahn, 2020). Up to 35% of the workforce may need to upgrade their skills and change their occupational disposition while technological innovation will increase economic growth and occupational productivity, particularly in developing nations(Mello, Ludolf, Quelhas, & Meiriño, 2020). For managers, decision-makers, trainers, and staff, the new work environment will reflect optimism along with worries and thought-provoking projects. Although the mismatch between occupational skills in the educational and industrial sectors is not new, the worry is growing as a result of the rapid advancement of technology. Unquestionably, digital skills are becoming essential for a large number of people who are living and working in the digital world today, and this trend will likely continue into the foreseeable future (Gilman, 2016). As seen from a gender perspective, women's workplace contributions are rapidly declining due to rising digital automation, and they exhibit the highest rates of digital phobia, poverty, and declining pay when compared to their male colleagues (Asi & Williams, 2020). The economic disparities revealed information about the distribution of occupations and offered advocacy tactics for improving economic justice for women in the workplace in the current, highly automated society(Gilman, 2016). There exist events that typically constituted an occupational effects of a bad computing experience, reflecting a global world shortages of competent persons, and perhaps lowering the performances of women's gender representation in information technology (IT) dominated workplaces (Bullough, Guelich, Manolova, & Schjoedt, 2022).

One of the fastest-rising economic trends of the twenty-first century is IT-driven organizations, which have the potential to hire more women(Lapsomboonkamol, Songkram, Thamsuwan, & Songkram, 2022). However, when IT was first implemented in organizations, it was thought to be a gender-neutral automation, similar to that in Western nations, but the IT results in the organizations seemed to be favorable to exclusively men(Cetindamar & Beyhan, 2019). When computers are difficult to use, interfaces appearing poorly designed, and people are unable to conform to computing expectations, this causes worry that the user won't be able to complete the task. The outcome led to user frustration, impacting user mood at work, effecting productivity level and interactions across the entire organizational ecosystem. Digital gadgets can be useful tools, and networked materials accessible through the Internet can benefit a variety of user communities and groups. Unfortunately, when people have frustrating encounters and are unable to complete their intended tasks, this hinders their ability to work effectively with the technology not minding the degree of sophistication. In the digital age, everyone is aware of computer issues and the aggravation that results when a computer application crashes unexpectedly, internet connectivity fails, input and output devices malfunction, and the system is unable to accept or process data into useful information. When the computer behaves in an unanticipated way that irritates users and prevents them from completing their desired tasks, frustration results (Jhaver,

Appling, Gilbert, & Bruckman, 2019). It becomes essential that users had unpleasant computing experiences afterward.

Computer users frequently contend with lengthy delays, incompatible application files, malfunctioning input/output devices, difficult-to-understand menus, and system crashes, all of which are recurrent motifs in their negative computing experiences(Lazar, Jones, Hackley, & Shneiderman, 2006). Users' negative computing experiences are clearly a serious problem that is strongly related to the digital divide. Due consideration must be given to documentation, tutorials, training, online user assistance, and helpdesk support for a user to use computer technologies efficiently(Cavus, 2013). In contrast to technical access, social access to technology includes things like user support, technical expertise, and a network of individuals who can assist(Kendall, Chaudhuri, & Bhalla, 2020). Even with the most up-to-date hardware, software, and network connections, users may still find poorly designed technology challenging to use. It is not sufficient to simply provide technology to those who are economically disadvantaged; effective closing of the digital divide calls for superior designs and a willingness to adapt, adopt, and collaborate to achieve outcome in the employment setting(Ma, Chan, & Teh, 2020). Only when people have support to use the technology properly and well-designed systems that are not frustrating can successes emerge. This study offered details on how users interacted with computers and computing tasks in an employment setting.

REVIEW OF RELATED LITERATURE

Service automation is now required due to the shift in the workplace in the twenty-first century from traditional manufacturing to IT service oriented industries (Li, Hui, Lang, Zheng, & Qin, 2020). All organizations have adopted IT since it has been recognized as one of the key vocational competencies that analysts believe will be absolutely necessary in practically every position in the future (Holford, 2019). The ongoing COVID-19 global pandemic had recently caused a set of computational paradigm shifts that the world had recently witnessed. These changes, which were fueled by the introduction of 5G network technology in the context of global automation with all of its opportunities and difficulties, were characterized by the Internet of Things (IoT), artificial intelligence (AI), robotics extreme automation. These changes helped countries perform better and the healthcare service sector to fulfill its key mandates. The COVID-19 epidemic, which is still continuing strong, has put a strain on the healthcare industry and forced medical experts to deal with the difficult situation of treating those who have only the tiniest social and physical connections with infected people. A number of healthcare technologies were created to help hospitals operate more efficiently because of the concern that workers in the healthcare industry would stand to gain from technological advancements in the ongoing COVID-19.

In the era of extreme digital automation in the twenty-first century, the idea of the Internet of Medical Things has arisen as the foundational element of the IoT promise for breakthrough in healthcare computing(Onyebuchi et al., 2022). The growth of enterprise 5G network infrastructures have made it necessary for billions of low-bit-rate, low-energy linked health monitoring devices, remote sensors, and clinical wearables to rely on the enterprise IoT framework and 5G network backbone infrastructure connectivity. Doctors, physicians, and healthcare providers will primarily rely on linked devices to gather, analyze, and digitally communicate patient data to those who will influence decision-making. In this case, real-time synchronized data retrieval and processing will enable healthcare providers to efficiently review all obtained electronic data and draw conclusions. The widespread adoption of IT should be gender-neutral because of the relatively innovative nature of the IT categorization, which means

that all associated technologies should be user-friendly to both women and men within the job distribution. Given that ICTs play a crucial strategic role in achieving gender equality and empowering women to take the lead in social justice, environmental ecosystem sustainability, and economic development, the relationship between gender and ICTs is extremely important in achieving sustainable occupational satisfaction(Kerras, Sánchez-Navarro, López-Becerra, & de-Miguel Gómez, 2020). As a result of recent advancements in information technology, processing power, data rates, connectivity, display size, and network transmission quality have all significantly increased. All of these developments raise the chance of unique experiences and the demand for reliable solutions(Hashem et al., 2015). Users generate opinions about particular technical concepts based on whether they believe those concepts to be practical, adaptable, simple to use, or horribly awkward(Tsai, Cheng, Tsai, Hung, & Chen, 2019) . When such conclusions about a particular technology's utility are made, people build positive use-performance strategies, adapt, form corporations, and share information on insightful findings.

Additionally, when new technology is used in a setting, the likelihood that it will have the most positive effect on job improvement is when it is appropriately built for the tasks that employees of the business will be performing(Afsar, Badir, & Khan, 2015). Each and every one will adopt the technologies and tools that will enable them to finish their assigned duty effectively and with the most profit. Technology or digital diffusion happens over a set period of time, with inventions going through a long and gradual growing process, followed by a sudden and dramatic adoption that eventually establishes and is then optimized. The amount of time a technology has been available to users has a direct correlation with how quickly an individual adopts it. The acceptance of any particular technology advancements by organizations is comparable, particularly in academic settings(Crupi, Del Sarto, Di Minin, Phaal, & Piccaluga, 2020). Information and communication technologies (ICTs) experiences will be the main focus of the ongoing changes in twenty-first century occupational proficiencies and extreme digital adjustments. The twenty first century learning possibilities, which stress digital-age literacy, creative thinking, efficient communication, and high organizational productivity, will be strengthened by the acquisition of digital skills through ICTs activation. Digital abilities for the twenty-first century, however, go beyond computer literacy and also include the capacity for critical thought, problem solving, communication, and teamwork.

Users have to react to unexpected, ambiguous, and potentially task-interfering situations when handling the general computing element. Frustration happens when users are unable to complete their work owing to inevitable digital complications, according to social psychology study literature(Dobrosovestnova & Hannibal, 2020). Users may be unable to complete their tasks and may experience emotional reactions such as frustration as a result of their inability to do so. Poor interface design, problematic computer hardware, unreliable software, or even users' ignorance of computer technology could be the root of the issue and result in digital annoyance (Fairbanks & Caplan, 2004). This is particularly relevant given that automation in modern workplaces has altered the makeup of computer users, introducing a larger proportion of non-technical workers with limited or no proficiency in disruptive technologies(Tribble, 2020). Employees are increasingly reluctant to use computers or avoiding digital automation completely due to technology frustration(Kadir & Broberg, 2020). According to the research conducted by (Lazar, Jones, & Shneiderman, 2006), a significant portion of people (42%) avoid using the internet because they perceive it to be excessively annoying and negatively affecting their digital orientation(Ceaparu, Lazar, Bessiere, Robinson, & Shneiderman, 2005). It may not be surprising to learn that employees waste between one-third and half of their computer time dealing with

uncomfortable situations, according to numerous studies on user annoyance with computing(O'Driscoll, Brough, Timms, & Sawang, 2010). On the other side, complicated computer technology can result in decreased levels of job satisfaction, as well as possible increases in blood pressure and muscular tension. In one survey, approximately 80% of employee computer users admitted to swearing out at a bothersome ICTs computing device(Onwubiko, 2022). The organizational employees had frequently been enraged, driving them to take extreme measures like shattering the computer screen or tossing the machine out the window(Adler-Nissen & Eggeling, 2022).

Digital Divide

Although ICTs have been integrated into the employment settings and educational systems of the majority of African nations, their adoption and growth have been sluggish because of a lack of effective ICT policies, long-term ICT infrastructure (such as electricity, Internet, software, and hardware devices), teacher capacity, and financial resources(Barakabitze et al., 2019). As a result, the use of ICTs in education and the general transformation of African Educational Systems (AES) in science, technology, engineering, and mathematics (STEM) using ICTs, particularly in a minority of African schools, have the potential to widen the digital gap due to a number of socioeconomic variables. This study offers a thorough analysis of cutting-edge approaches and ICT-based frameworks with an emphasis on reforming Africa organizational workplace and educational environment utilizing ICTs(Gumel, Abdullahi, & O, 2019). In fact, new ICT project developments and announcements of ICT for education (ICT4E) projects happen somewhere on the continent virtually every day. But for many years, we have observed that investment has been directed on making new technologies work in educational settings with limited resources, a focus that tends to take an ICT-centric approach. The promotion of ICT4E integration in AES is crucial for reshaping African society's development through STEM courses in this era of knowledge, regardless of how well understood ICTs are in education now. The future of AES clearly calls for innovative approaches and solutions that prioritize teachers' use of ICT as a crucial tool to support instruction and outfit learning institutions with the required IT infrastructures.

The adoption of ICT policies by African countries continues to support growth in a variety of socioeconomic sectors (including education) and to guide growth and competition. The information and digital economy that emerged in the twenty-first century wasn't just a transition from an industrial-based economy to one that reflected technological and automation models; rather, it was accompanied by revolutionary changes in many important spheres of human endeavor, especially the labor-intensive culture that had aided in the promotion of social diversity and structural inclusiveness(Kerras et al., 2020). In this regard, the ongoing technological advancements and regular ICT advancements were key drivers in the development of the information society. A disparity in access to ICTs or IT in general is referred to as the "digital divide." (Scheerder, van Deursen, & van Dijk, 2017). The digital divide was once thought to be a matter of having access to or not having access to current technologies, but with the global prevalence of mobile phone technology at over 95%, it is now more of a matter of those who have more or less internet bandwidth and more or less digital competences(Reddick, Enriquez, Harris, & Sharma, 2020). However, study revealed that the digital divide is more complex than just a problem with access to technology and cannot be solved by simply giving the required computing hardware. Information accessibility, information use, and information receptiveness are the three main elements that reduce the incidence of the digital divide(Jang & Gim, 2022). The purpose of information technology professionals is to help close the gaps in the digital divide by offering resources and information services to aid people in learning how to use the technologies at their

disposal in the twenty first century for comprehensive digital inclusive smart society(Blažič & Blažič, 2020).

Knowledge Divide

The knowledge economy and digital ecosystem have emerged as a result of the pervasiveness of twenty-first-century digital work environments(Lyons, 2019). The digital adaptations of the modern global economy of value, which is characterized by a paradigm shift in ICT, have the potential to alter the global economy (Espino-Díaz, Fernandez-Caminero, Hernandez-Lloret, Gonzalez-Gonzalez, & Alvarez-Castillo, 2020),(Kostoska & Kocarev, 2019). Due to the emergence of disruptive technologies, digital knowledge is becoming increasingly important for the employment environment in today's society. The adoption of mass media information democracy has encouraged the phenomena of knowledge gaps within the educational classes(Lind & Boomgaarden, 2019). The discrepancy in living standards between those who can find, produce, manage, process, and share information or knowledge and others who are hampered in this endeavor is known as the knowledge divide(Zhou et al., 2022),(Liu, Yang, Li, & Zhong, 2022). According to the 2005 UNESCO World Report, the growth of the information society in the twenty-first century has caused knowledge to become an expensive resource, gradually affecting who has access to power and financial gain(Cowell, 2006),(Chan & Costa, 2005). Rapid information dissemination on a massively global scale as a result of breakthrough information media technologies had the potential to widen knowledge gaps between people, organizations, and countries(Anton, Silberglitt, & Schneider, 2001). The general concept of knowledge gap, however, was actually a representation of the differences in knowledge composition between various personalities, including racial, gender, and socioeconomic groups. The digital gap, on the other hand, separates people and countries according to whether they have access to contemporary internet, disruptive technology, and scientific knowledge(Warschauer, 2004),(Bianco, 2022).

Several researches on general computer technology automation and frustration severity like those conducted by (Yang & Dorneich, 2018), measured how often frustration occurred, what caused frustration and how bad the experience was in educational learning. The study identified the factors that end users find frustrating, including difficult-to-understand error messages, failed network connections, and hidden elements on the human computer interface (HCI). According to studies, digital frustrations are a significant issue that stem from the perspectives of the knowledge and digital divides and need to be addressed thoroughly. Self-reported high levels of annoyance and wasted time were among the top worries in the severity of human computer frustration, it became clear from various developments(Preece, Sharp, & Rogers, 2015). Understanding the causes and recurrences of user annoyance is a crucial first step in learning more about how to lessen the degree of workplace annoyance. Additional studies looked on the automatic detection of users' stressful employment experiences and how computer systems and interface designs could react to those events.

STATEMENT OF PROBLEM

All across the world, academic institutions, businesses, enterprises, and individuals are investing a substantial sum of money in computing technology, educational software, computers, and broadband Internet connections as requirement for ICT implementation(Duderstadt, Atkins, Van Houweling, & Van Houweling, 2002),(Istiningsih, 2022). In order to empower students to fully participate in today's digital society, teachers must provide them with the knowledge and technological know-how necessary to lead in a technologically advanced society and motivate

them to use online learning resources. However, the investigation of digital technologies was to consolidate the pre-existing nomenclatures of education, such as student evaluation, school administration, and managerial activities, which justified the use of computer technology in the classrooms(Mcelhinney, 2018). The most upsetting outcome for the employee users was the significant amount of time lost as a result of their difficult experiences integrating digital technology. Owing to the reasonable amount of time lost in front of the computer due to frustrating encounters, productivity may have decreased. Additionally, the impact may have harmed interpersonal interactions, such as those between students and teachers, as the outcome affects user mood.

In order to better understand how instrumental (the incident scenario) and dispositional (the individual's traits) elements affect the level of dissatisfaction, these social repercussions of frustration for women gender users were investigated. In our first analysis of data from female computer users, we found that 33% of users in the survey expressed anger toward the computer as a result of a difficult experience. Despite the fact that just 11% of users admitted to being annoyed at themselves, 25% of users said they felt overwhelmed or defeated, suggesting that some users do indeed feel a loss of control while dealing with computer issues. However, 17% of the users were determined to solve the issue, which may be related to the high degree of experience the subjects claimed. Another investigation of data from computer users of both sexes, men and women, looked at comparable statistics. The most often mentioned specific sources of annoyance were power outages (reported by 38% of respondents), lack of internet access (35%), computer hardware issues (indicated by 5%), incompetence/lack of technical expertise (cited by 2% of respondents), and software malfunction (20%).

RESEARCH PURPOSE

The goals of this study were to:

1. Present information about the social effects of computer users' bad computing experiences.
2. Examine the effects of unpleasant computing encounters on female employee users to see whether any emotional reactions occur. In order to achieve this, we first developed a standard framework for analysis, reanalyzed the data from male computer users, and then carried out the identical analysis on female staff users before drawing findings.
3. To determine the uses of computers in the academic setting.
4. Techniques for raising employee women's and men's computer proficiency levels in order to balance out positive computing outcomes.

RESEARCH METHODOLOGY

Primary and secondary sources were used to collect data for this investigation. The dissemination of the questionnaires to the randomly chosen participants was necessary for the primary sources. The secondary sources of data, on the other hand, combined digital archives with academic works that examined the topic of discontent with digital technology. The study was conducted in 2019 as part of academic research work. The study's objectives were used to create a thorough questionnaire that was given to both men and women at the beginning. 120 men and 250 women employees who were chosen at random took part in the survey. Male employees returned 107 out 120 questionnaires distributed and 137 questionnaires from women gender were returned for a response rate of 88% and 56%, correspondingly.

SAMPLE AND POPULATION OF THE STUDY

This study employed a demographic sample made up of tertiary school personnel from South Eastern Nigeria who used computers at work (both male and female). The necessary sample size of 250 female and 120 male staff users of computers and computing activities was chosen using proportionate stratified random selection. When necessary, the researcher employed a questionnaire and in-person interviews to gather data, and descriptive statistics were used to analyze the data in relation to the study topics. Out of the two hundred and fifty (250) and additional one hundred and twenty (120) copies of the questionnaire that were distributed among the female and male employee computer users regarding frustration with computers and computing equipment in the office. One hundred thirty-seven (137) questionnaires from female staff computer users and another one hundred seven (107), representing response rates of 55% and 89%, respectively, were duly completed, returned, and deemed appropriate for the study. These users, who recorded their experiences using their computers at work, were either computer professionals or not. The study tools employed for the male and female participants were the same.

HYPOTHESIS OF THE STUDY

In analyzing the hypothesis, two options were analyzed which include Null Hypothesis ($\mathbf{H_o}$), and the Alternative Hypothesis ($\mathbf{H_1}$). In this study, the following hypothesis has been formulated to guide the research outcome.

Null Hypothesis (H_o).

a. User computing experiences, whether positive or negative, are heavily influenced by the digital and knowledge divide.
b. User emotional and psychological responses are impacted by the state of computing devices.

Alternative Hypothesis (H_I)

a. User computing experiences are not caused by the digital or knowledge divide.
b. The emotional and psychological responses and dispositions of the user are unaffected by the state of computer devices.

DATA ANALYSIS

Demographics of the Sample Population

Table 1: Distribution of Respondents by Gender

Female	146	60
Male	98	40
Total	244	100

Field Survey, 2019

According to Table 1, Fig. 1, 146 respondents (60%) are women, while 98 respondents (or 40%) are men.

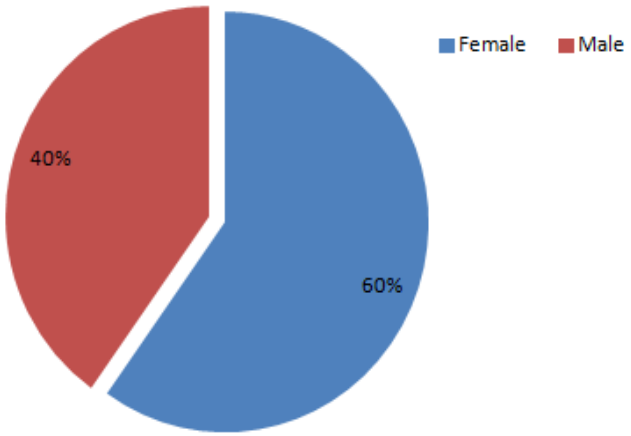

Fig 1: Gender Distribution of the Study

Table 2: Duration of the Respondents' Computer Experience.

Years	Frequency	Percentage%
1-5 Years	50	21
6-10 Years	80	33
11-15 Years	54	22
16-20 Years	42	17
21-Above	18	7
Total	244	100

Field Survey, 2019

According to the data in Ta ble 2 above, 50 (21%) of the respondents had computer experience between one and five years, 80 (33%) had computer experience between six and ten years, 54 (22%) had computer experience between eleven and fifteen years, 42 (17%) had computer experience between sixteen and twenty years, and 18 (7%) had computer experience at age twenty-one or older.

Table 3: Level of Education of the Respondents

Qualification	Frequency	Percentage (%)
OND	10	4
HND/BSC	96	39
PGD	50	20
MSC	78	32
PHD	10	4
Total	244	100

Field Survey, 2019

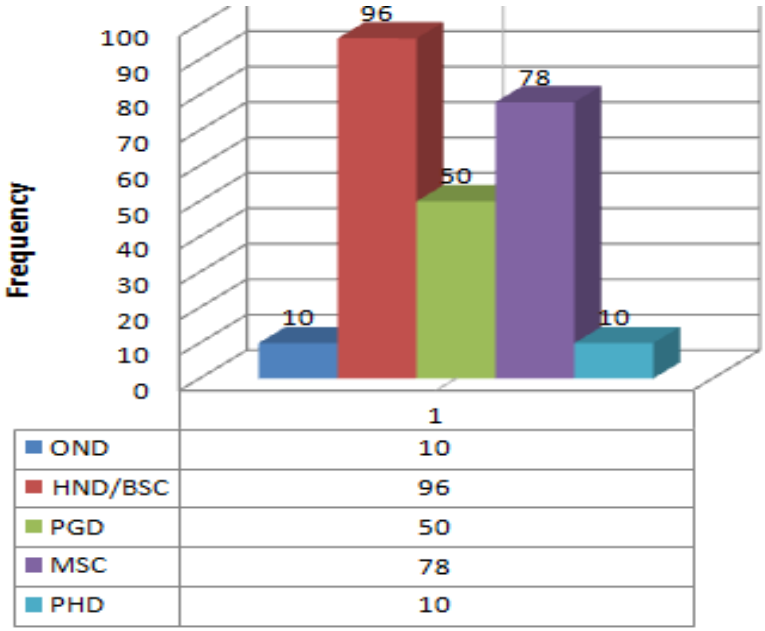

Fig. 2: The Educational Level of the Respondents

According to data in Table 3 and Fig. 2, 10 (4% of the respondents) have an OND that has been completed or is expected to be completed; 96 (39%) have an HND or BSC that has been completed or is expected to be completed; 50 (20%) have a PGD; 78 (32%) have an MSC; and 10 (4%) have a PHD. These people work in information technology, either professionally or not.

Table 4: The Respondents' use of devices for Internet information searches.

Computing Devices	Frequency	Percentage %
Smart Phones	220	31.42857143
PDAs & Portables	50	7.142857143
Tablets	20	2.857142857
Laptops	180	25.71428571
Desktop	230	32.85714286
Total	700	100

Field Survey, 2019

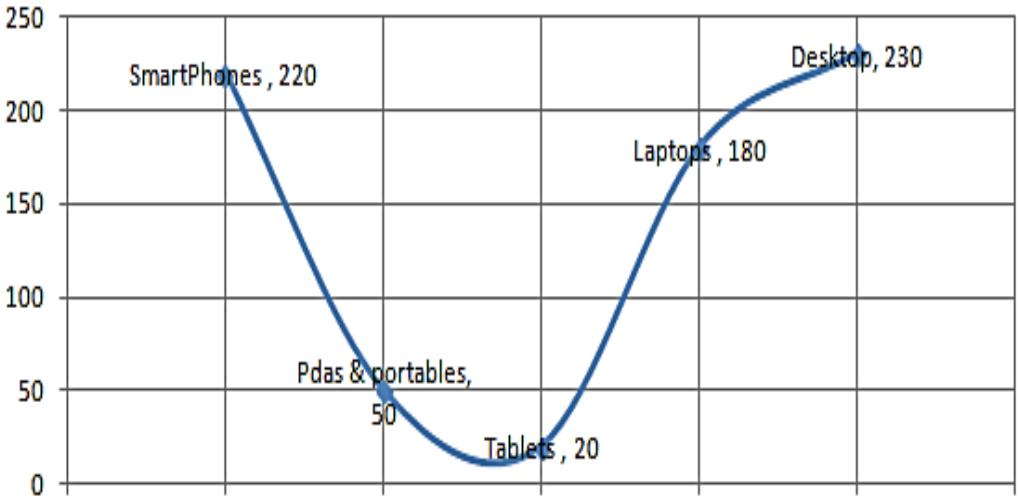

Fig.3: The Device Utilization by the Respondent

According to data in Table 4 and Fig. 3 above, 220 respondents (31.4%), 50 respondents (7.1%), 20 respondents (2.9%), 180 respondents (25.7%), and 230 respondents (31.9%) utilized smartphones, tablets, laptops, and desktops, respectively.

Table 5: The distribution of respondents' computing device requirements

Purpose of Use	Frequency	Percentage
Research Uses	160	29
Social/Communication	140	25
Training & Learning	120	22
Business/E-Transacts	80	15
Unclassified	50	9
Total	550	100

Field Survey, 2019

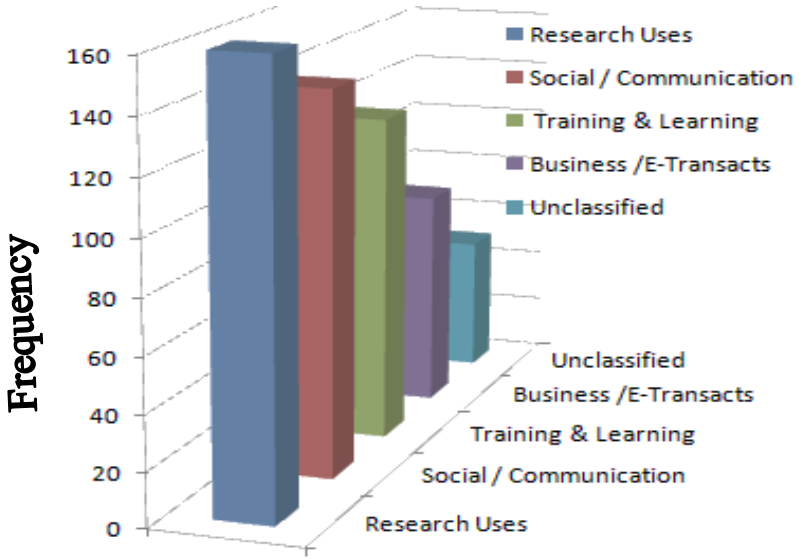

Fig.4: Users demand for Digital Computing Devices

According to the data in Table 5 and Fig. 4 above, 160 respondents (29%) used computers for academic and research purposes, 140 respondents (25%) used them for social and communication purposes, 120 respondents (22%) used them for training and learning, 80 respondents (15%) used them for business, and 50 respondents (9) agreed to use them for unclassified purposes.

USER EXPERIENCE WITH COMPUTER PRIOR TO FRUSTRATING

Table 6: What did you run into at a crucial juncture that prevented you from finishing your task on time?

N=370		
Experience of Frustration	**Frequency**	**Percentage (%)**
Electricity Seizure	140	38
Lack of Internet Access	128	35
Hardware (Input/Output) Failures	18	5
Inadequacies in Digital Proficiencies	8	2
Software Failure	76	20
Total	**370**	**100**

Field Survey, 2019

The information in table 6 gives a clear picture of what is currently occurring in a typical academic environment. It is bothersome that the majority of computers used at work are desktop models with no power backup, necessitating energy/electricity to operate. Waiting for electricity to power the computers caused people to waste a lot of time. In order for academia to participate in an online global platform, internet connectivity is a difficult problem. Table 6 shows that a significant portion (140) of the study's irritating experiences, or 38% of them, were related to power outages. While 35% of the sample as a whole, or 128 respondents, concurred that their frustrations were brought on by problems with no internet access, the other way around. However, 18 respondents, or 5% of the sample, recognized that their annoyances are being brought on by I/O malfunctions in computer hardware. The unsatisfactory computing experience of 8 respondents, or 2% of the sample, was attributed to incompetency or a lack of necessary abilities. Last but not least, 76 respondents (20%) concurred that aspects of their annoying interactions are related to software (Operating System, Applications, File corruption, Virus Attacks, and difficult to locate features). The users' accounts of feeling defeated or resigned are intriguing, suggesting that some users do in fact experience a loss of control when coping with computer troubles.

Important Note: Due to the way those forms were structured and the fact that participants had only one choice, the frequency in table 7 (Female Users) closely equal the total number of frustrating circumstances that were noted. When the two tables are merged, the overall frequency total more than 244 instances of frustrating situations. This is because some participants reported more than one sentiment due to the nature of the data collection method (Male and Female Employee table).

EXPERIENCE AFTER BEING FRUSTRATED

Feeling of Female Computer Users after a Frustrating Experience

In an effort to determine what kind of response was appropriate from the subjects following a computer issue, the subjects were asked to assess their sentiments after the frustrating events.

Table 7: Women Users Share Apprehensive Digital Incidence

N=137		
Feelings	**Frequency**	**Percentage (%)**
Infuriated at the Computer	45	33
Provoked at Yourself	15	11
Concluded to Fix it	23	17
Depressed	34	25
Other	20	15
Total	137	100

Field Survey, 2019

In the survey, 45 (33%) of the frustrating encounters left the user feeling irritated with the computer. There aren't Many Annoying Experiences Due to their self-efficacy and thorough understanding of computing, users reported feeling annoyed at themselves in 15 (11%) and 23 (17%) frustrating experiences. When faced with computer issues, some users do in fact feel as though they have lost control of the situation, as evidenced by the 34 (25%) frustrating experiences that the users reported as discouraging. Meanwhile, 20 (15%) of the respondents said that they had also experienced other frustrating issues.

Computer User Post-Frustrating Experience Feeling in Male Employees

Table 8: Male Employee Users' Post-Frustrating Experience

N=107		
Feeling:	**Frequency**	**Percentage%**
Infuriated at the Computer	51	48
Provoked at Yourself	8	7
Concluded to Fix it	16	15
Discouraged	21	20
Others	11	10
Total:	107	100

According to Table 8 information, 51 (48%) of the study's participants felt angry with the computer as a result of a frustrating experience. Only 8 (7% of the users) said they were frustrated with themselves, while 21 (20%) said they were discouraged, suggesting that some users do indeed feel out of control when dealing with computer issues. Although 16 (or 15%) of the users were determined to fix the problem, 11 (10%) respondents claimed there were further frustrating challenges they had encountered, which may be mediated by the high level of experience mentioned by the subjects.

HYPOTHESIS TESTING

H_1:

i. Digital and knowledge gaps are not the causes of computer user frustration.
ii. The emotional and psychological responses of the user are unaffected by the status of the computer device.

Versus H_o: Not H_1.

Observed Table

Feelings	**Male User**	**Female User**	**Total**
Provoked at the Computer	51	45	96
Infuriated at Yourself	8	15	23
Concluded to Fix it	16	23	39
Disappointed	21	34	55
Others	11	20	31
Total	107	137	244

Source: Field Survey 2019

Expected Table

Feelings	**Male Employees**	**Female Employees**	**Total**
A	E_{11}=107 x 96/244 = 42.098	E_{12}=137 x 96/244 = 53.9	96
B	E_{21}=107 x 23/244 = 10.09	E_{22}=137 x 23/244 = 12.9	23
C	E_{31}=107 x 39/244 = 17.1	E_{32}=137 x 39/244 = 21.9	39
D	$E4_1$=107 x 55/244 = 24.1	E_{42}=137 x 55/244 = 30.9	55
E	E_{51}=107 x 31/244 = 13.6	E_{52}=137 x 31/244 = 17.4	31
Total	**107**	**137**	**244**

RESULT AND DISCUSSION

Test Statistics

$$\sum_{i=1}^{r}\cdot\sum_{j=1}^{c}\frac{(\mathbf{O_{ij}}-\mathbf{e_{ij}})^2}{e_{ij}}\sim \mathbf{X^2_{(r-1)\,(c-1),\,1-\alpha}}$$

$$\frac{(51-42.1)^2}{42.1}+\frac{(8-10.1)^2}{10.1}+\frac{(16-17.1)^2}{17.1}+\frac{(21-24.1)^2}{24.1}+\frac{(11-13.6)^2}{13.6}+\frac{(45-53.9)^2}{53.9}+\frac{(15-12.3)^2}{12.9}+\frac{(23-21.9)^2}{21.9}+\frac{(34-30.9)^2}{30.9}+\frac{(20-17.4)^2}{17.4}$$

=1.88223916 + 0.431453627 +0.071066733 + 0.403304456 + 0.495076284 + 1.470070001 + 0.336974731 + 0.055504674 + 0.314989611 + 0.386665419

= 5.847344696

At 5% level of significance, that is, α=0.05 tabulated Chi Square value.

The degree of freedom α = (5-1) (2-1) = 4

x^2 (2-1) (5-1), 0.95 = x^2_4, 0.95

=9.448

Decision rule: Reject $\mathbf{H_o}$ if X^2 Calculated > X^2 Tabulated.

Decision: Since X^2 Calculated = 5.847344696 is less than X^2 Tabulated (9.448). We will accept $\mathbf{H_o}$.

We can therefore draw the following conclusion:

i. The digital and knowledge divide are the main causes of frustration among computer users.
ii. The state of computer devices affects users' emotional and psychological reactions.

DISCUSSION

This study has investigated the impact of computer user dissatisfaction in the professional setting. The disappointments that have a significant impact on the researchers on a serious note are just one of the study's many significant implications. According to the research's findings, there is a high level of user aggravation with computers and computing technology, and some users do indeed feel out of control while dealing with technical difficulties. Again, the study showed that when significant tasks are delayed and a significant amount of time is lost, the result is that the person becomes frustrated. The negative effects of frustration on computer users' social interactions and health are significant. Two user population categories—female users and male employees—were the subject of the analysis. It makes sense to carry on with this research while concentrating on a specific user group utilizing a well-supported and evidence-based methodology. Users who are younger, have particular traits, are older, are in their second year of high school, have anomalies, etc. will all be taken into consideration by the technique.

ANALYSIS OF RESULTS FROM THE POINT OF VIEW OF THE USER POPULATION

In the analysis of the populations of female and male employee computer users, there were three crucial variables that stood out particularly:

1. How important the current task is.
2. The amount of time required to solve the problem.
3. The time lost throughout the course of the assignment.

This demonstrates that regardless of the user population, the importance of the work and the amount of time lost as a result of the frustrating experience are the biggest sources of annoyance. Higher degrees of frustration were caused by more significant tasks and more time lost. The bad news is that factors like years of computer experience or training have no effect on the level of frustration. Regardless of skill level, male and female computer users will always feel frustrated when a crucial work is delayed for a long period as a result of a frustrating encounter. In all user groups, there was a correlation between the impacted days and the times to remedy them as well as the time lost. Our research showed that, for both female and male users, the amount of time lost because of a frustrating experience affects how the user's day will likely go. However, self-efficacy was not a factor for male users, despite the fact that it is substantially correlated for female users in half of the categories studied. The degree of frustration had an impact on the Female's post-experience attitude and outlook for the remainder of the day. These factors included experience level, aptitude for solving the problem, and tenacity in tackling it. We found that male computer users, irrespective of the user group, show a high level of self-efficacy in managing their frustration with the devices. Compared to women, they can manage digital annoyances with more composure. Male users fretted about their digital difficulties just as much as female employees were anxious about finishing the duties.

CONCLUSION

This analysis was conducted to determine the effect of computer user annoyances. Simple percentage tables, descriptive statistics, and chi-squared hypothesis testing were used to evaluate the data. The study found that some computer users do, in fact, have unpleasant experiences and bad sentiments when things go wrong, which is referred to as frustrations. Analysis revealed that regardless of the user demographic, the importance of the task at the time of interruption and the amount of estimable time lost as a result of whatever the issue was, are the reasonable causes of unpleasant experiences and frustration. The aggravation levels are extremely high for all classes of user population, regardless of personal experience level with computers, when a critical task is stocked in the delayed queue for a decent amount of time as a result of a negative interaction.

RECOMMENDATION

The positive contributions made by contemporary technologies to the development of society and humanity are acknowledged in this study article. As a result, the authors advise further empirical investigation into the effects of the 21st-century computers and computing technology, which are mostly employed in businesses and schools. A different strategy for extending this research, however, is to look at the typical user experiences when using particular kinds of computer apps in addition to other behaviors that were associated with digital usage. In more concrete terms, several studies have looked at what happens when you browse the web, what troubles you have with your operating system, what problems you have when using a spreadsheet program, etc. A well-focused design recommendation can be assessed and possibly realized with the help of such fine-grained research, which will shed light on the precise issues in certain

applications. It is vital to stress that future study needs to focus more on the psychological effects of digital frustrations as well as health difficulties. To create a level playing field in a world where technology is permeating every aspect of life, training, coaching, and support staff services should be utilized efficiently. This will provide a balance to the efficient use of digital computing.

REFERENCES

Adler-Nissen, R., & Eggeling, K. A. (2022). Blended Diplomacy: The Entanglement and Contestation of Digital Technologies in Everyday Diplomatic Practice. *European Journal of International Relations, 28*(3), 640-666.

Afsar, B., Badir, Y., & Khan, M. M. (2015). Person–job fit, person–organization fit and innovative work behavior: The mediating role of innovation trust. *The Journal of High Technology Management Research, 26*(2), 105-116.

Anton, P. S., Silberglitt, R., & Schneider, J. (2001). *The global technology revolution: bio/nano/materials trends and their synergies with information technology by 2015*: Rand Corporation.

Arntz, M., Gregory, T., & Zierahn, U. (2020). Digitization and the Future of Work: Macroeconomic Consequences. *Handbook of Labor, Human Resources and Population Economics*.

Asi, Y. M., & Williams, C. (2020). Equality through innovation: Promoting women in the workplace in low-and middle-income countries with health information technology. *Journal of Social Issues, 76*(3), 721-743.

Barakabitze, A. A., William-Andey Lazaro, A., Ainea, N., Mkwizu, M. H., Maziku, H., Matofali, A. X., . . . Sanga, C. (2019). Transforming African education systems in science, technology, engineering, and mathematics (STEM) using ICTs: Challenges and opportunities. *Education Research International, 2019*.

Bianco, A. (2022). Agriculture and New Technologies: A Basic Challenge for the Twenty-First Century *Italian Studies on Food and Quality of Life* (pp. 113-124): Springer.

Blažič, B. J., & Blažič, A. J. (2020). Overcoming the digital divide with a modern approach to learning digital skills for the elderly adults. *Education and Information technologies, 25*(1), 259-279.

Bullough, A., Guelich, U., Manolova, T. S., & Schjoedt, L. (2022). Women's entrepreneurship and culture: gender role expectations and identities, societal culture, and the entrepreneurial environment. *Small Business Economics, 58*(2), 985-996.

Cavus, N. (2013). Selecting a learning management system (LMS) in developing countries: instructors' evaluation. *Interactive Learning Environments, 21*(5), 419-437.

Ceaparu, I., Lazar, J., Bessiere, K., Robinson, J., & Shneiderman, B. (2005). Determining Causes and Severity of End-User Frustration (2002).

Cetindamar, D., & Beyhan, B. (2019). Unveiling women entrepreneurship in technology ventures: gendered organization and gendered society interactions *Handbook of Research on Techno-Entrepreneurship, Third Edition*: Edward Elgar Publishing.

Chan, L., & Costa, S. (2005). Participation in the global knowledge commons: challenges and opportunities for research dissemination in developing countries. *New library world*.

Cowell, R. (2006). Towards knowledge societies. UNESCO World Report. UNESCO Publishing, Paris, 2005, 226pp. ISBN 92-3-104000-6. *Practice Development in Health Care, 5*(1), 48-49.

Crupi, A., Del Sarto, N., Di Minin, A., Phaal, R., & Piccaluga, A. (2020). Open innovation environments as knowledge sharing enablers: the case of strategic technology and innovative management consortium. *Journal of Knowledge Management*.

Dobrosovestnova, A., & Hannibal, G. (2020). *Teachers' Disappointment: Theoretical Perspective on the Inclusion of Ambivalent Emotions in Human-Robot Interactions in Education.* Paper presented at the Proceedings of the 2020 ACM/IEEE International Conference on Human-Robot Interaction.

Duderstadt, J. J., Atkins, D. E., Van Houweling, D. E., & Van Houweling, D. (2002). *Higher education in the digital age: Technology issues and strategies for American colleges and universities*: Greenwood Publishing Group.

Espino-Díaz, L., Fernandez-Caminero, G., Hernandez-Lloret, C.-M., Gonzalez-Gonzalez, H., & Alvarez-Castillo, J.-L. (2020). Analyzing the impact of COVID-19 on education professionals. Toward a paradigm shift: ICT and neuroeducation as a binomial of action. *Sustainability, 12*(14), 5646.

Fairbanks, R. J., & Caplan, S. (2004). Poor interface design and lack of usability testing facilitate medical error. *The Joint Commission Journal on Quality and Safety, 30*(10), 579-584.

Frey, C. B. (2020). *The technology trap: Capital, labor, and power in the age of automation*: Princeton University Press.

Gilman, M. E. (2016). En-Gendering Economic Inequality. *Colum. J. Gender & L., 32*, 1.

Gumel, A. A., Abdullahi, A. B., & O, U. M. (2019). *The Need for a Multimodal Means of Effective Digital Learning through Data Mining and Institutional Knowledge Repository: A Proposed System for Polytechnics in Northern Nigeria.* Paper presented at the Proceedings of the 2019 5th International Conference on Computer and Technology Applications.

Hashem, I. A. T., Yaqoob, I., Anuar, N. B., Mokhtar, S., Gani, A., & Khan, S. U. (2015). The rise of "big data" on cloud computing: Review and open research issues. *Information systems, 47*, 98-115.

Hassan, R. (2020). The economy of digitality: Limitless virtual space and network time. *Condition of Digitality: A Post-Modern Marxism for the Practice of Digital Life, The*, 97.

Holford, W. D. (2019). The future of human creative knowledge work within the digital economy. *Futures, 105*, 143-154.

Iqbal, R., Doctor, F., More, B., Mahmud, S., & Yousuf, U. (2020). Big Data analytics and Computational Intelligence for Cyber–Physical Systems: Recent trends and state of the art applications. *Future Generation Computer Systems, 105*, 766-778.

Istiningsih, I. (2022). Impact of ICT integration on the development of vocational high school teacher TPACK in the digital age 4.0. *World Journal on Educational Technology: Current Issues, 14*(1), 103-116.

Jain, A., & Srinivasan, V. (2018). Implications of Digital Automation Technologies on Work Design. *Academy of Management Global Proceedings*(2018), 95.

Jang, S.-g., & Gim, T.-H. T. (2022). Considerations for Encouraging Citizen Participation by Information-Disadvantaged Groups in Smart Cities. *Sustainable Cities and Society, 76*, 103437.

Jhaver, S., Appling, D. S., Gilbert, E., & Bruckman, A. (2019). " Did You Suspect the Post Would be Removed?" Understanding User Reactions to Content Removals on Reddit. *Proceedings of the ACM on human-computer interaction, 3*(CSCW), 1-33.

Kadir, B. A., & Broberg, O. (2020). Human well-being and system performance in the transition to industry 4.0. *International Journal of Industrial Ergonomics, 76*, 102936.

Kendall, L., Chaudhuri, B., & Bhalla, A. (2020). Understanding technology as situated practice: Everyday use of voice user interfaces among diverse groups of users in urban India. *Information Systems Frontiers, 22*, 585-605.

Kerras, H., Sánchez-Navarro, J. L., López-Becerra, E. I., & de-Miguel Gómez, M. D. (2020). The Impact of the Gender Digital Divide on Sustainable Development: Comparative Analysis between the European Union and the Maghreb. *Sustainability, 12*(8), 3347.

Kostoska, O., & Kocarev, L. (2019). A novel ICT framework for sustainable development goals. *Sustainability, 11*(7), 1961.

Lapsomboonkamol, S., Songkram, N., Thamsuwan, P., & Songkram, N. (2022). The Mediating Effect of Knowledge Integration on the Relationship between Capability and Innovative Behaviour. *Emerging Science Journal, 6*, 92-107.

Lazar, J., Jones, A., Hackley, M., & Shneiderman, B. (2006). Severity and impact of computer user frustration: A comparison of student and workplace users. *Interacting with Computers, 18*(2), 187-207.

Lazar, J., Jones, A., & Shneiderman, B. (2006). Workplace user frustration with computers: An exploratory investigation of the causes and severity. *Behaviour & Information Technology, 25*(03), 239-251.

Li, X., Hui, E. C.-m., Lang, W., Zheng, S., & Qin, X. (2020). Transition from factor-driven to innovation-driven urbanization in China: A study of manufacturing industry automation in Dongguan City. *China Economic Review, 59*, 101382.

Lind, F., & Boomgaarden, H. G. (2019). What we do and don't know: A meta-analysis of the knowledge gap hypothesis. *Annals of the International Communication Association, 43*(3), 210-224.

Liu, Y., Yang, Y., Li, H., & Zhong, K. (2022). Digital economy development, industrial structure upgrading and green total factor productivity: Empirical evidence from China's cities. *International journal of environmental research and public health, 19*(4), 2414.

Lyons, I. (2019). TOWARD KNOWLEDGE SOCIETIES IN THE GANDHIAN PERSPECTIVE AND THE CIVIL RIGHTS MOVEMENT. *Journal of Dharma, 44*(4), 427-444.

Ma, Q., Chan, A. H., & Teh, P.-L. (2020). Bridging the Digital Divide for Older Adults via Observational Training: Effects of Model Identity from a Generational Perspective. *Sustainability, 12*(11), 4555.

Mcelhinney, N. (2018). *Teacher educator commitment to early Modern Foreign Language (MFL) teaching and learning in the education systems of England, France and Scotland.* Bordeaux.

Mello, S. L. d. M., Ludolf, N. V. E., Quelhas, O. L. G., & Meiriño, M. J. (2020). Innovation in the digital era: new labor market and educational changes. *Ensaio: Avaliação e Políticas Públicas em Educação, 28*(106), 66-87.

O'Driscoll, M. P., Brough, P., Timms, C., & Sawang, S. (2010). Engagement with information and communication technology and psychological well-being *New developments in theoretical and conceptual approaches to job stress* (Vol. 8, pp. 269-316): Emerald Group Publishing Limited.

Onwubiko, E. C. (2022). Social perception of the image of public libraries and librarians by users as catalyst of transformation: A survey. *Library Philosophy and Practice*, 1-30.

Onyebuchi, A., Matthew, U. O., Kazaure, J. S., Okafor, N. U., Okey, O. D., Okochi, P. I., . . . Matthew, A. O. (2022). Business Demand for a Cloud Enterprise Data Warehouse in Electronic Healthcare Computing: Issues and Developments in E-Healthcare Cloud Computing. *International Journal of Cloud Applications and Computing (IJCAC), 12*(1), 1-22.

Preece, J., Sharp, H., & Rogers, Y. (2015). *Interaction design: beyond human-computer interaction*: John Wiley & Sons.

Reddick, C. G., Enriquez, R., Harris, R. J., & Sharma, B. (2020). Determinants of broadband access and affordability: An analysis of a community survey on the digital divide. *Cities, 106*, 102904.

Scheerder, A., van Deursen, A., & van Dijk, J. (2017). Determinants of Internet skills, uses and outcomes. A systematic review of the second-and third-level digital divide. *Telematics and Informatics, 34*(8), 1607-1624.

Sweet, S., & Meiksins, P. (2020). *Changing contours of work: Jobs and opportunities in the new economy*: SAGE Publications, Incorporated.

Tribble, L. S. (2020). *The importance of soft skills in the workplace as perceived by community college instructors and industries.* Mississippi State University.

Tsai, J.-M., Cheng, M.-J., Tsai, H.-H., Hung, S.-W., & Chen, Y.-L. (2019). Acceptance and resistance of telehealth: The perspective of dual-factor concepts in technology adoption. *International Journal of Information Management, 49*, 34-44.

Warschauer, M. (2004). *Technology and social inclusion: Rethinking the digital divide*: MIT press.

Yang, E., & Dorneich, M. C. (2018). Evaluating Human–Automation Etiquette Strategies to Mitigate User Frustration and Improve Learning in Affect-Aware Tutoring. *Applied Sciences, 8*(6), 895.

Zhou, R., Tang, D., Da, D., Chen, W., Kong, L., & Boamah, V. (2022). Research on China's Manufacturing Industry Moving towards the Middle and High-End of the GVC Driven by Digital Economy. *Sustainability, 14*(13), 7717.