


Telecommuting Practices and Trends in the Digital Transformation

Elisha Ondieki Makori, University of Nairobi, Kenya*

 <https://orcid.org/0000-0003-1966-3253>

Norah Osebe Mauti, Adventist University of Africa, Kenya

ABSTRACT

The paper investigated insights of telecommuting practices and trends in the digital transformation. Critical objectives were to find the priorities behind telecommuting developments, examine disruption technologies and trends to transform and advance virtual teleworking practices, determine sustainable strategies and programmes for telecommuting arrangements, and explore lessons learned for future prospects from remote working practices. Teleworking practices have opened and expanded economies and business opportunities in organizations worldwide. Trending digital innovations advancing telecommuting in the knowledge economy include internet of things, enterprise mobility, cloud solutions, and blockchain. Robust technological infrastructure, management, communication, and cultural trust are among the top strategies for sustaining telecommuting programmes. In the post-COVID-19 world, telecommuting is fundamental and mandatory, and therefore, leaders, people, organizations, professionals, and communities have a lot to gain from the practice.

KEYWORDS

Digital Technologies, Digital Telecommuting, Digital Transformation, E-Communting, Information Organizations, Innovations, Kenya, Telecommuting, Telework, Teleworking, Virtual Teleworking

INTRODUCTION

COVID-19 pandemic resulted to sudden transformation and change in governments, organizations, industries and professions across the globe. The pandemic has challenged society in ways once considered unimaginable, forcing people to reconsider a wide variety of practices, from work to leisure, basic travel and daily tasks (Lina & Nantapong, 2021). The crisis also created unexpected economic activities where employees began working from home using information communication technologies (ICTs). With no effective treatments or vaccines available yet for this novel disease, governments and companies ordered workers to work from home in order to remain safe (Yuhuan, Chungjen & Li-Fang, 2021). To these authors, one such response was the adjustment to modified work

DOI: 10.4018/IJICST.320476

*Corresponding Author

This article published as an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>) which permits unrestricted use, distribution, and production in any medium, provided the author of the original work and original publication source are properly credited.

arrangements (DWAs), such as telecommuting. With another response being, where large number of businesses turned to digital technology to continue operating, with personnel working from home and using tools, such as videoconferencing, cloud services and virtual private networks (OECD, 2021). In the same spirit, Mihoko, Lauren and Diane (2021), talk of flexible work arrangements (FWAs) that involved flextime/flexible work schedules, formal and informal leaves, compressed workweeks, voluntary part-time work, job sharing, job exchange and phased retirement. In addition, these authors note that, telecommuting was much less common than these other types of flexible work arrangements. On the other hand, technology made telecommuting emerge as a viable option for library and information work. Flexible work arrangements require adequate technology and effective managerial communication that depend on the types of positions and individuals involved, according to these authors.

Digital transformation, in tandem with economic disruption and recession, changed and revived industries, organizations and professions through adoption of technologies. Telecommuting became the form of flexible work most often discussed in library and information science (LIS) literature beginning in the mid-1990s, when technological advancements made it possible (Mihoko, Lauren & Diane, 2021). Adoption and adaptation of digital technologies accelerated economic growth as well as increased productivity and performance in industries and businesses. The research explored and reviewed telecommuting practices and trends in the digital transformation. Thinking priorities behind telecommuting developments are reviewed. Disruption technologies and trends to transform and advance virtual teleworking practices after the pandemic and the new normal are discussed. Detailed insights on strategies and programmes to sustain telecommuting arrangements are analyzed. Potential lessons for future prospects are also presented. This research provides useful insights regarding emerging technologies useful in sustainable telecommuting practices and programmes in organizations.

DIGITAL TELECOMMUTING TRANSFORMATION

Telecommuting is a form of remote work in which organizational employees work from other physical locations (Susan, 2020). Telework implies work achieved with the help of ICTs and conducted outside the employer's locations (International Labour Organization, 2020). On the same note, telework refers to any type of work arrangement where workers work remotely, away from an employer's premises or fixed location, using digital technologies, such as networks, laptops, mobile phones and the internet (Eurofound, 2020a). This concept also includes the self-employed workers who work in a place other than their usual workplace using ICT. Evolution of telecommuting remains closely linked to the history of the internet and personal computers. Digital economy and emerging technologies, such as internet of things (IoT), artificial intelligent (AI), big data analytics and fifth generation (5G) have impacted on telecommuting transformation. These digital technologies have transformed teleworking arrangements in organizations and industries. Telecommuting or teleworking implies work arrangement and agreement often done by employees from homes or agreed places using digital technologies. This means that work is conducted and achieved from outside the locations or premises of the organization or employer through technological solutions.

Telecommuting or e-commuting is work autonomy and flexibility done by employees independently from the office premise or location through disruptive technologies. Working from home is currently known as an alternative working to minimize the risk of COVID-19 infection, though the concept is not new and has been brought to the attention of several schools of thought for many years (Lina & Nantapong, 2021). Firms have switched to some type of hybrid work model, in which employees split their time between remote and office work, or mixed-mode model, which comprises of a mixture of full-time remote employees and full-time office employees (Longqi et al., 2022). Telecommuting involves three different types that often overlap: remote working, teleworking, working from home as well as telework and ICT-based mobile work (TICTM) (Sostero et al., 2020 & Eurofound, 2020a). Practice of telecommuting has also been described in various concepts and

terms as “working from home”, “homeworking”, “teleworking”, “e-commuting”, “virtual work”, “electronic homeworking”, “remote working”, “distributed work” or “telework and ICT-based mobile work” (Lina & Nantapong, 2021, International Labour Organization, 2020, Angel & Amaya, 2020). The terms “e-work” and “home-anchored work” have also been suggested as alternatives to telework (Chrisalena & Georgios, 2021). Different countries prefer slightly different concepts and definitions, for example, Italy uses *smart working* (*lavoro agile*), and Germany has *mobile working* with Ireland being *remote working* (SAMEK LODOVICI et al., 2021). Personnel that telecommute are known as “teleworkers” or “work-at-home” employees. Fundamental foundation of telecommuting is the connections made through telecommunication systems to the independent workplaces and locations.

Telecommuting or teleworking is the workplace of things where job tasks and activities are performed outside the organization with the help of digital disruptions and practices. Transition and revolution to teleworking can be sustained and harnessed through effective digital development and implementation practices. With such programmes and initiatives, governments, organizations and stakeholders can tackle work issues smoothly with information communication technologies and socio-economic conditions. Digital technologies promote and enable people to work from anywhere anytime provided one is connected. Rapid technological advances have necessitated the development and implementation of digital telecommuting transformation and social dialogue with the concerned partners – governments, organizations and professions.

NEW NORMAL AND ECONOMIC TRANSFORMATION

Health and economic crisis related to the COVID-19 pandemic and the required physical distancing measures have forced many firms to introduce telework (working from home) on large scale (OECD, 2020). This global report has catalysed wider adoption of teleworking practices, where public policies and co-operation among social partners are crucial to ensure that new, efficient and welfare-improving working methods emerging during the crisis are maintained and developed once physical distancing is over. In the face of the unfolding COVID-19 crisis, the European Union (EU) and member states took action to minimise its impact on businesses, workers and citizens (Eurofound, 2021). However, from this report, the implications of the COVID-19 crisis went beyond the effects on the economy and the labour market, with the daily lives of EU citizens being changed beyond recognition. According to this report, the reductions in working hours and job losses increased the share of households reporting challenges in making ends meet, leading more households to fall into rent and mortgage arrears and default on consumer loans. With growing number of businesses under threat while putting the jobs of more and more workers at risk there was urgent need to initiate mitigation policies as indicated in this report.

The COVID-19 health crisis has turned into a global economic crisis, putting at risk the health, jobs and incomes of millions of people around the world (ILO-OECD, 2020). Accordingly, the impact of the pandemic and containment measures led to a severe contraction in economic activities as many people were unable to go to work and businesses could no longer operate. The report indicates that, the G20 countries moved rapidly to provide unprecedented levels of emergency support to keep households and companies afloat, protect jobs and incomes as well as prevent the economy from collapsing. Alongside efforts to address the health emergency brought about by the COVID-19 pandemic, countries across the G20 have adopted a vast range of emergency measures aimed at supporting firms’ liquidity in the face of mandatory business restrictions, quarantines and plummeting activities. Since the economic and labour market impacts had gone far during the pandemic, working practices had to be adapted to comply with travel restrictions, social distancing measures and other health and hygiene protocols (Eurofound, 2021).

The International Labour Organization (ILO) (2020) has been keen on teleworking especially during this period of COVID-19. First and foremost, the year 2020 brought unprecedented changes to the global economy and the world of work. Secondly, the devastating nature of the COVID-19 pandemic necessitated swift and drastic government responses to limit social interactions, in order to

slow the spread of the virus and ensure that healthcare systems do not become overloaded. Thirdly, policy options that support employers and employees in relation to sustainable teleworking had been introduced in organizations and institutions. ILO reports that, organizations that were previously familiar with teleworking, as well as those that haven't experimented with the practice before, sent employees home, creating the conditions for the most extensive mass teleworking experiment in history. Fourthly, ILO developed a guide to provide practical and actionable recommendations for effective teleworking that are applicable to a broad range of actors; support policymakers in updating existing policies; and provide flexible framework through which both private enterprises and public sector organizations can develop or update own teleworking policies and practices. The guide also includes a number of case examples regarding how employers and policymakers handled teleworking during the COVID-19 pandemic. Internationally, telecommuting is increasingly becoming common practice in organizations. With the new norm, telecommuting has increasingly gained popularity as the modern work practice. From 2020, telework has become the new normal in working life (Cecilia, Ingela & Joel, 2021).

DIGITAL TRANSFORMATION POLICIES AMONG DEVELOPED NATIONS AND CONTINENTS

Researches on developed countries in America, Europe and Asia indicate massive adoption and integration of teleworking practices. Teleworking movement began in the United States of America where organizations, industries and professions have implemented the practice. Among the developing or transitional economies, the notion of teleworking is new, while postindustrial economies (United States, United Kingdom, Germany, Nordic countries) witnessed deeply embedded teleworking practices in existing organizations at all levels prior to the pandemic (Ammar, 2020). The main reasons of the inequality in adopting and implementing teleworking between countries are the differences in technology (digital divide) and the economic characteristics (postindustrial, industrial, transitional, or developing) of these countries, says this author. In addition, in the postindustrial economies, the importance of knowledge, services and research grow at the expense of manufacturing. Based on this author, these postindustrial countries have transformed their economies into knowledge-based economies and digital economies. First and foremost, the knowledge-based economy has had significant implications on telework practices because the investment in knowledge enables teleworkers to be knowledgeable and highly educated workers who can use this knowledge to work from home. Secondly, incorporating high technology intensity, particularly information communication technology (ICT), at the organizational level allows teleworkers to intensively use acquired technology to perform work duties and responsibilities and achieve organizational goals. Thirdly, teleworkers can contribute in the transition to the knowledge-based economy by using ICT. Digital economy and knowledge-based are underpinning the telecommuting transformation. Before the pandemic, discussions on the future of work-life were unclear and often questioned (Lina & Nantapong, 2021). COVID-19 forced decisions upon people, and with the world having to adapt quickly, many businesses opted to work from home (WFH), add these authors. In the United States of America, according to these authors, the work from home practices have been employed widely with 35.2% of the workforce working from home in May 2020. Statistics on telework in the European Union show that there are differences between age groups, nations, sectors and professions (Cecilia, Ingela & Joel, 2021).

Extensive analysis from Ammar (2020) indicates that, prior to the pandemic, telework practices varied substantially between countries, sectors and occupation. Teleworking varied across the sectors and was more common in knowledge-intensive services and least common in manufacturing and less-intensive service market. Many high skilled jobs in knowledge-intensive industries can be done through teleworking technological devices, such as laptops. In addition, this author says that, physical presence is essential to perform jobs in manufacturing, construction, agriculture, electricity or water supply, mining and accommodation among others. Regarding occupation, teleworking was more

common among high skilled occupations (professionals, managers) indicating that many occupations prone to be done remotely for now require high skills. But, as Ammar notes, telework practices were lowest, but relatively frequent, among low-skilled and medium-skilled workers. In France and the United Kingdom, teleworking rates during the pandemic were higher among workers in large firms (OECD, 2021). Among the reasons attributed to this are that digital technology uptake favour large firms and the concentration of small firms in sectors that are less amenable to teleworking, for example, tourism, restaurants or small retailers (OECD, 2019).

Postindustrial economies have well developed digital infrastructure than in transitional economies. These developed countries as indicated elsewhere are highly equipped and advanced in digital transformation or industrial revolution – present the fifth industrial revolution. In the new norm, widespread telework may remain a permanent feature of the future working arrangements catalysed by the experiences made during the COVID-19 crisis (OECD, 2020). Telework used to be a tool to make employment more attractive, though it has currently become a measure to stop infection (Cecilia, Ingela & Joel, 2021). From Ammar, teleworking turned to be a crucial practice for both the private and public sectors in maintaining and sustaining the economy and work activities during the lockdown period of the COVID-19 pandemic. However, not all jobs can make the switch to teleworking, but only a minority of jobs can be done from home (OECD, 2021 & Dingel & Neiman, 2020). According to OECD research survey in 2021, Australia, France and the United Kingdom, had 47% of employees who teleworked during lockdowns in 2020. In Italy, teleworking rates in the second quarter of 2020 were over 4 times the level of before the pandemic, increasing by 15 percentage points on an annual basis.

DIGITAL TRANSFORMATION POLICIES AMONG DEVELOPING NATIONS AND CONTINENTS

COVID-19 has accelerated the shift away from traditional office work to full-time remote work policies and arrangements (Lund, Cheng, André Dua, Robinson & Sanghvi, 2020). International organizations and industries in China together with Hong Kong and Taiwan as well as Japan conduct business transactions and operations through telecommuting. Japan that did not institute a nationwide lockdown experienced increased teleworking rate from 10% to 28% between December 2019 and May 2020 (OECD, 2021). Additionally, the idea of work from home was a fantasy to many people, but such practices were considered not practicable for heavily populated cities like Hong Kong (Lina & Nantapong, 2021). According to Tanpipat et al. (2021), working from home in Thailand is a workplace strategy and many international organizations have included remote working policies in business operations. These authors report, first, that remote work became a big challenge among organizations when the COVID-19 pandemic was declared in March 2020. Working amidst the pandemic required physical distancing to prevent disease transmission. Second, all organizations in every impacted sector, were forced to embrace remote working protocol to prevent workplace density. Employees were kept safe by launching the work from home policy. In such conditions, organizations consider reducing unnecessary expenses, such as office rent and building maintenance costs. Based on OECD research survey in 2021, teleworking in Brazil doubled from 5% in 2019 to over 10% in May 2020.

However, teleworking programmes have attracted minimal attention in African countries and organizations. America and European telecommuting programmes are yet to be embraced and aligned in the African work environment and workplace despite the rapid socio-economic and technological growth. Africa has suffered economic backwardness in the past decades and the impacts of COVID-19 join a long list of factors that expose the continent to a poor state of being (Runsewe, 2020). According to this author, first, African countries have been propelled due to the pandemic to impose various preventive and containment measures with South Africa, Rwanda, Tunisia and the Democratic Republic of Congo constituting some of the countries that announced complete lockdowns. Second, governments through state machineries and media have urged residents to stay home and keep social distant, all in order to limit person-to-person transmission. Third, many employers across the continent

therefore transitioned to telecommuting; permitting employees to work from home. This has been felt now more than ever before with the world of work changing especially with the availability of communication technologies and digital platforms, which have enabled some types of work to be delivered from anywhere in the world by anyone. Fourth, workplaces and the education sector can now create new, sustainable models which are accessible, inclusive and qualitative.

Rapid penetration of digital technologies has led to what Anwar and Graham (2020) call the gig economy. Gig work in Africa has received a lot of media and corporate backing, driven largely by the supposed ICT revolution that is currently taking place in Africa. The rise of the gig economy in low and middle income countries is seen as generating a new wave of employment opportunities for poverty reduction impacts. The African continent is characterized not only by rampant unemployment but also high rates of informal and vulnerable employment, which can be underpaid and unpaid (ILO, 2020). Therefore, the affordances of digital technologies, such as the internet creates a sense of connection to the wider world among workers and an escape from the current realities of dysfunctional local labour markets. Anwar and Graham (2020) continue to say that workers joining gig work from Africa are enticed by the top-down narratives and discourses of economy. Policy rhetoric for development within the international organizations, such as the World Bank, is to promote self-employment and entrepreneurship among the unemployed, and gig work platforms are seen as one of the tools to foster entrepreneurship among workers, opine the authors. Additionally, the emergence of the gig economy on the African continent has enabled many to join new labour markets but it also comes with plenty of risks. Furthermore, platforms usually do not have workers best interests in mind and have generally skirted regulatory and juridical scrutiny both globally and regionally in Africa. Telecommuting provides new opportunities for organizations and institutions to conduct businesses due to the spread of COVID-19. Kenyan universities and related academic institutions have adopted digital and online teaching and learning despite lack of adequate digital and technological infrastructure and training opportunities. Multinational companies and industries have also adopted telecommuting arrangements.

THINKING PRIORITIES BEHIND TELECOMMUTING

Technological advancements and developments continue to shape humanity, communities and organizations through emerging economies and sustainable development. Telecommuting practices have ushered in rapid and phenomenal changes in the work environment where business operations and related activities are driven through appropriate digital infrastructure. In the case of an unforeseen event (extreme weather, terrorism, pandemic) that prevents employees from taking up work at their regular offices or workplace, the possibility of teleworking allows them to perform work offsite and keep the organization operational (International Labour Organization, 2020). Telecommuting has become very popular and being able to work from anywhere anytime provided one is connected or linked is more of a normal standard business practice than exception. Amidst COVID-19, Lashitew (2020) says that, the pandemic has brought to light the vast digital divide between the developed world and the global South. As the developed world becomes even more interconnected with the rolling out of 5G of telemobile technologies of networks, there is the risk that the developing ones are left farther behind. Bridging this gap is essential for Africa's economic development. This author also adds that COVID-19 perhaps brings salience to the view that internet connectivity is a basic human need or even a right.

The digital divide between developed and developing world should be bridged as soon as possible for everyone to benefit from telecommuting. The term digital divide represents the inequality in approaching and achieving a digital economy because of economic inequalities among countries (Ammar, 2020). Digital development classifies countries as information rich and information poor, notes Ammar. Paradigm surge to telecommuting practices in organizations has changed the workplace environment for onboarding employees. Most business organizations have been weighing viable options for adoption and integration of e-commuting practices. According to Ammar (2020),

first, ICTs provide an advantage to telework practices through diminishing the spatial and temporal boundaries between different work activities, supported multitasking. Second, the advancement in technology allows teleworkers to be always connected through their personal devices (smartphones, laptops, tablets) outside their workplace and the time allocated for work activity. Third, despite advancements in ICT, telework creates new complexities in the workplace dynamic for employees. Fourth, to overcome these limitations, there is need to elevate the collaboration between teleworkers in smart work centers, work hubs and co-working centers; and the desire to invest in the infrastructure required to telework.

In the increasingly challenging knowledge economy, business organisations are looking for ways to improve the bottom-line. In order to compete effectively in global markets, organizations are streamlining operations, downsizing operational structures and reducing overhead costs and travel expenses. To meet higher customer expectations for quality service, organizations are looking for ways to get employees closer to the people in order to help achieve better sustainable results with limited resources. In a scenario, such as the COVID-19 pandemic, teleworking has proven as an important aspect of ensuring business continuity through reduced commuting time, increased opportunities for workers to focus on work tasks away from the distractions of the offices and opportunities for better work-life balance (International Labour Organization, 2020). The practice offers flexible schedule for employees and the freedom to work from alternative locations, away from the premises of the employers despite the risks, such as isolation (particularly for individuals living alone) and loss of contact with fellow employees, which it is essential to anticipate and prevent, add the ILO.

DISRUPTION TECHNOLOGIES AND TRENDS

Digital transformation has exponentially created new prospects and frontiers in the new world order, often called post COVID-19. With the outbreak of the COVID-19 crisis, remote working practices have changed and progressed rapidly due to innovations and technological trends in the markets. Since the outbreak of the pandemic and the associated surge in teleworking, employers have also increasingly turned to various forms of remote digital control (SAMEK LODOVICI et al., 2021). Digital telecommuting transformation is fundamentally facilitated through information communication technologies. Technically highly technological devices and tools have the potential to harness and drive potential changes in organizations and institutions. Transforming and aligning telework with technology is essential in bridging the digital divide and recovery of businesses from the devastating impact of the pandemic. To advance virtual teleworking practices, it is important to take into consideration the core value of digital technologies. Disruption technologies and trends that have defined and expanded virtual teleworking or e-commuting horizons with massive return on investments include internet of things, enterprise mobility and cloud, artificial intelligence (AI) and robotics and blockchains.

FRONTIER AND EMERGING TECHNOLOGIES

Humans and things are increasingly being integrated into the wireless world with impressive and robust disruptive technologies and innovations. The progress in several frontier technologies is one of the major components that lead to the evolution of telework practices (Ammar, 2020). Disruption technologies widely used at the workplace include internet of things, artificial intelligence, automation, blockchain, cloud computing, data analytics, robotics and online surveillance techniques. Rapid advances in these technologies are an advantage for telework practices because teleworkers may benefit from the increased capacity in telecommunication networks and the cost reduction in communication and data storage and processing, add this author. Furthermore, teleworkers may use or develop many applications to bring in new services and features from the digital infrastructure to enhance their work-from-home practices and connect to their workplace and the customers. On the same note,

digital applications are significant for the efficient functioning of connected devices, particularly in real-time data exchange. Finally, this author notes that, the applications possess important milestones for teleworkers for running their work smartly.

With the dramatic rise in teleworking with the COVID-19 pandemic, there has been a sharp increase in the demand for online workplace surveillance tools (SAMEK LODOVICI et al., 2021). There is a wide range of technologies used for employee surveillance and monitoring as shown by these authors. These range from *artificial intelligence* (e.g. automated and semi-automated systems, including algorithmic decision-making and management, machine learning and deep learning tools); *big data and data analytics* (e.g. use of digital tools for analysing data collected at the establishment or from other sources); *biometrics* (i.e. all processes used to recognise, authenticate and identify persons based on physical and/or behavioural characteristics); *global positioning system (GPS)* (for localising and tracing goods and people); *internet of things and wearables* (e.g. smartwatches, head-mounted displays, body cameras and smart clothing); and *radio-frequency identification (RFID)* in the form of using microchips for electronic tagging (Eurofound (2020b)). These authors also note that, ICT companies have, for a long time, been developing online workplace surveillance (software) tools and apps, such as ActivTrak, InterGuard, Veriato 360, Teramind, WorkSmart, Work Examiner and Sneek.

Blockchain technology has in-built robustness that allows transparent creation, sharing exchange and authentication of digital information without change and being corrupted. This technology promotes new business applications and opportunities in data management, sharing economy, crowdfunding, governance – and protection of intellectual property. Blockchain encourages digital collaboration where teleworkers work from home while eliminating the need for intermediaries and management functions. Organizations and industries need impressive hyperconnectivity technology for real virtual and online collaboration. Hyperconnectivity and information security provide core values that telecommuters require to work remotely and virtually from homes and agreed locations.

CLOUD COMPUTING

In the new and better normal, the expanded use of telework depends upon digitalization, advanced communication and cloud technologies (International Labour Organization, 2020). In the context of work and the workplace according to this author, digitalization refers to the increased presence and use of cloud computing and scheduling tools as well as web-based applications across different platforms to facilitate remote access and collaborative work. Technology included not only stable and fast internet but also other technical solutions to facilitate flexible work, such as cloud-based systems and video-conferencing software (Mihoko, Lauren & Diane, 2021). Since the beginning of the pandemic, the pace of digitalization has quickened, the adoption of digital technologies by enterprises leading to increased opportunities for workers to carry on working from home (International Labour Organization, 2020). With cloud and hybrid digital systems, businesses and employees have the opportunity to share data and information from multiple sources.

In the digital economy, digital data can increase the level of job autonomy because control of data by teleworkers enables them to transform the data into digital intelligence (Ammar, 2020). According to this author, organizations and teleworkers can use these digital data as the core for all fast-emerging digital technology, such as internet of things, cloud computing, artificial intelligence, data analytics and all internet-based services. Data-centric business models are being adopted by lead companies across different sectors and by digital platforms, which enable teleworkers to work with confidence, opine this author. Digital platforms enable not only velocity of knowledge exchange, collaboration and communication but also make organizations relevant in the digital economy. These digital tools and devices have defined and changed the manner in which both people and organizations conduct work. Highly technological advances and cloud computing have made the virtual working arrangements possible and sustainable in organizations. Internet advancement and mobile computing resources provide virtual working practices for the teleworkers.

SUSTAINABLE STRATEGIES AND PROGRAMMES

With the outbreak and disruption of COVID-19 pandemic, numerous organizations and institutions have rapidly embraced remote work practices. This implies putting in place robust strategies to maintain this new normal and enhance efficiency, increase productivity and improve employee relationship. Teleworking needs adequate strategies and support from all stakeholders - governments, organizations and people. As regards to sustainable remote work, technological investments are crucial priorities if employees' productivity and performance tasks are to be achieved. Fortunately, successful telework practices require many elements, for example, government policies, management, job autonomy and digital infrastructure planning (Ammar (2020)). These are discussed based on a detailed research from Ammar.

Government Policies

Telework practices were encouraged by governments to mitigate the negative effects on economic performance at the national and international levels. Organizations encouraged their employees to work from home to avoid losing capital. This shows the importance of the role of government policies in promoting telework practices. Governments should create or support knowledge-based economy in their national strategies that should include all major sectors of society, for example, education, health, commerce, civil society, science and the private sector. This national strategy should develop knowledge-based economy in a sustainable, persistent manner. Since digital transformation is complex and evolving rapidly, the policy approach toward telework in the context of COVID-19 mitigation measures and the development of knowledge-based economy and digital economy must be coordinated, multidisciplinary and holistic, and there might be uncertainty about the digital future. Furthermore, these policies require involving relevant stakeholders to enable the design of resilient policy frameworks in response to the pandemic and the evolving digital transformation. The countries should be able to create appropriate mechanisms that enable the collection of required information for producing the intelligence necessary to formulate and implement suitable policies and strategies. However, the level of development in various countries is different; hence, the policy priorities may differ between underconnected and hyper-digitalized countries or between developed and developing countries. Many of these countries have many constraints and difficulties that prevent them from benefitting from the knowledge-based economy or digital economy.

While acknowledging that teleworking will be a permanent feature of post-pandemic working life, SAMEK LODOVICI et al. (2021) opine that at the European Union level, there are no specific legislative measures targeting teleworking and ICT-based mobile working (TICTM). However, there are several pieces of EU legislation regarding employment and working conditions, such as working times and work-life balance for both teleworkers and other TICTM workers ("digital nomads"). In addition, there is a large set of EU initiatives and policies addressing the development of digital skills in the population and the availability of broadband infrastructure. Such initiatives and support seek to ensure a good level of digital skills in the working population and widespread availability of digital tools and infrastructure.

Policies and guidelines from the government are fundamental in the success of teleworking environment. From OECD (2020), first, policies should ensure that teleworking remains a choice. This is to prevent that remote working arrangement are "overdone". Skill gaps among different worker groups, combined with the fact that jobs requiring high skills already appear to be most prone to telework, suggest that more widespread telework may exacerbate existing disparities in working conditions. Policies should provide equal employment opportunities and working time arrangements without any bias. Second, policies should encourage arrangements that provide workers with appropriate working environment. Employee productivity and improved satisfaction, depend crucially on working conditions while teleworking, e.g. ICT equipment, office space or childcare. Third, policies should facilitate the diffusion of best practice managerial practices developed in response to the increased use of telework. Managers need to adapt to the opportunities and challenges posed

by telework. Finally, policies should support the provision of access to a fast, reliable and secure ICT infrastructure for firms and workers. Its first and foremost feature is to provide efficient means of communication, preferably by means of video conferencing, for which reliable and fast internet connections are necessary.

Better guidelines and policies from the government should be in place to properly regulate and make work from home feasible (Lina & Nantapong, 2021). Policies help maximise the potential productivity gains from effective teleworking while protecting workers from negative effects and assuring innovation in the long-run (OECD, 2020). Besides the potential to productivity improvements, such policies also promise additional benefits for a range of other policy areas, such as contributing to gender equality, improving job opportunities in rural areas and reducing congestion and housing costs in urban areas as well as better work-life balance in general. From this author, relevant policies support complementary investments, help surmount cultural and legal hurdles, and mitigate potential side effects.

MANAGEMENT PRACTICES

Management is another significant element in the successful implementation of telework practices. Management of teleworkers is more complex and challenging than managing employees at the workplace, particularly during crisis, such as COVID-19 pandemic. Management incorporates the competencies of managing diverse, complex work arrangements by utilizing technology within a government's policy framework. Furthermore, good management skills require managers to recognize, understand and be sensitive to differences in local cultures, particularly in a society of multinational workers. The attitude and behavior of managers toward teleworking are crucial for the adoption of telework practices. In the absence of government policy and legislation that support telework, teleworkers must rely on their organizational managers. Managers also have the perception that teleworkers might not focus on their work. Nevertheless, technology can provide managers with media to communicate, collaborate and monitor teleworkers and customers.

To sustain telecommuting requires effective leadership and management skills that are crucial in holistic strategic goals and investment capabilities in businesses. Digital telecommuting transformation depends upon leadership and change management with strategic decisions to support new prospects and innovations. Based on the digital economy and the pandemic experience, to remain competitive in telework is no longer an option but a necessity for organizations, industries and professions. Modern social management practices require sustainable approaches for increased growth and productivity. Besides modern proactive management practices, employers and employees should embrace the culture of trust and honesty without confrontation and resistance. Massive mobilization of financial resources is not only the top priority but also political support is required to develop and implement robust infrastructure to support teleworking programmes in organizations. Financial resources must be provided if smart technological systems and solutions to manage and support teleworking are anything to be achieved. Digital nomad workers consist largely of Generation Z and Millennials who are technology-savvy with instant information through digital infrastructure.

DIGITAL INFRASTRUCTURE

Digital infrastructure that often refers to a collection of information technologies and systems that jointly produce a desired outcome is expected to have a transformative impact on telework practices. IoT along with machine-to-machine communication comprises fundamental elements of digital infrastructure: ICT networks, data infrastructure, digital platforms, digital devices and applications. This technology allows smart devices to exchange information, collect and share data, create new interactions, and respond to other smart devices. As smart devices become the mainstream in technology, these devices enable access to substantial amount of data and the application of real-time

analytics. With the availability of digital data, teleworkers working from home could respond to the organization's customers. Many companies are investing in upgrading and digitalizing their systems after considering the value derived from digital infrastructure. Investments in digital infrastructure to facilitate new methods of communicating can facilitate telework practices. ICT networks are considered the core digital infrastructure of connectivity. Digital infrastructure can facilitate telework; hence, government policies associated with investments in digital infrastructure should provide opportunities for employees to telework. With the emergence of the IoT, computing power, communication network speed, and data storage, many organizations in different countries are transforming to digitalization, which require strong digital infrastructure. IoT is a crucial parameter of digital infrastructure and a new paradigm that facilitates the increased performance and coordination of existing technologies, which teleworkers can use to perform their work that fulfills high-quality standards. However, IoT resources must be managed holistically in order to avoid misuse. Furthermore, technology support is significant in the success of telework practices.

Robust digital infrastructure is among the fundamental resources that normally determines the success and failure of the virtual teleworking arrangement in organizations. Highly advanced technologies facilitate telecommuters in performing work. Modern digital and virtual work environment depend upon digital technologies and applications. Robust technology infrastructure is needed to facilitate connectivity and high speed internet. Forensic audit and feasibility assessment on information technology infrastructure should be done to evaluate the readiness of employers to sustain and manage telecommuting programmes. Organizations should have blueprint information communication technology strategies with elaborate and clear policies, standards and procedures to guide both employers and employees. Planning and arrangement of security for technological systems and associated solutions must be adequate and well supported by all, including telecommuters.

JOB AUTONOMY

Job autonomy is an essential feature for the successful implementation and adaptation of telework practices in different organizations. This practice allows teleworkers to make decisions on when, how, and where to work to achieve their duties and attain the organizational objectives, through having an explicit agreement with management on expected outcomes (productivity). Job autonomy results in a greater level of job satisfaction for teleworkers. To promote job autonomy in telework practice, teleworkers should have the potential for self-development and a great sense of achievement and efficiency, just as they would when working in a regular office. Telecommuting practices should enhance social corporate responsibility and balance between issues affecting the families and work environment. Policy initiatives normally promote working conditions, employment terms and decent work for increased productivity.

HOME ENVIRONMENT, TRAINING AND EDUCATION

Telecommuting arrangement at home or elsewhere must be well established, maintained and handled. Proper planning and preparation of setting the home environment need to consider the physical space and boundaries. Training and education programmes to provide soft skills and competencies that teleworkers and managers need to facilitate virtual work, collaboration and communication. Teleworkers and non-teleworkers should also be trained in information technology systems if desired performance and high productivity are to be achieved and sustained in the long-run. Absolute guidance into adapting to remote online work together with resources and proper training are required if this practice is to be a feasible option or the new normal (Lina & Nantapong, 2021). Teleworkers must learn new digital skills or might lose their jobs as the nature of work changes (Ammar, 2020). Therefore, policymakers and organizations must establish lifelong learning programs to help workers to be better prepared, to adapt, to cope with, and to be more resilient during the transition process, particularly

in the virtual world, notes this author. Furthermore, according to this author, the increase in the use of digital platforms may result in an increase in work flexibility, which could facilitate telework practices. From this author, public and private sectors in many countries offer online services, which are considered the most innovative, advanced online services and easier for make telework practices, for example, e-health, e-learning, e-commerce, e-finance and e-banking. Teleworkers may take advantage of e-services and other digital platforms to enhance performance and productivity, add this author.

LESSONS LEARNED FOR FUTURE PROSPECTS

Going forward, it will be paramount for many governments in the developing and developed world to play a central role in drawing out the lessons learned from the transition to telework practices, and apply these lessons to revise existing or initiate new teleworking policies (Ammar, 2020). Furthermore, the lessons learned from the COVID-19 pandemic are relevant for the future of teleworking arrangements (International Labour Organization (2020). Digital infrastructure and applications have redefined and reinvented virtual teleworking arrangements in organizations. Telecommuting has bridged the gap between employers and employees by taking work virtually to the employees. Imperative strategies and programmes to align digital telecommuting transformation require socio-economic change, technological and telecommunications systems, performance management, relationships, corporate culture and management practices. Organizations should embrace and implement telecommuting programmes in order to ensure business continuity and empower employees, the digital nomads – modern workers. Employers and employees must be open to new ideas and knowledge in the new normal and digital dispensation. One may be required to know how to balance family life with work in the agreed arrangement. Telecommuting practices require total support and collaboration from employers and employees as well as family members. Organizations should provide necessary infrastructures plus financial support, while family members facilitate friendly working environment for the teleworkers to work properly.

Telecommuting practices and programmes are mandatory in the digital economy, and that appropriate policies and legislations need to be implemented in organizations. Africa has highly developed and advanced information communication technology to host and support virtual working arrangements and agreements, though limited researches have been done. Internet of things and mobility enterprises have extremely transformed and reinvented telecommuting practices in the digital environment. Paradigm surge on teleworking trends continue unabated with scholars, researchers and experts predicting for universal sustainable strategies and approaches. African businesses and organizations should learn to adopt and integrate best technological practices. Internationally, there is no point of return insofar teleworking practices and programmes are concerned. Learning to align with telecommuting practices is much better than remaining isolated and irrelevant in the digital landscape. Telecommuting technologies and innovations have created sustainable opportunities for the betterment of humanity and the society at large.

FURTHER RESEARCH

The phenomenon of telecommuting is quite new in developing countries despite the socio-economic challenges that face these nations. Public and private organizations need insightful knowledge and strategies to realize and sustain this practice through further research. The notion of teleworking is about disruption practices that involve both technological and management dimension. In addition, new theories and radical changes are required to address and support this noble practice through deep research. Telecommuting research within the African context can provide useful information to organizations, industries and professionals. The paradigm approach to adapt telecommuting practices needs further research to define critical aspects and legal frameworks.

CONCLUSION

Telecommuting is increasing in usage and popularity worldwide. The next level should be supporting the adoption of laws that help, rather than burden, telecommuters. The focus is no longer on whether telecommuting is just momentary trend, but instead on its widespread acceptance and longterm sustainability. Further still, the COVID-19 pandemic has posed unprecedented challenges that require policymakers to adopt innovative solutions, including implementing lessons learned from previous economic downturns. Post COVID 19 and the emerging digital and disruptive technologies provide the foundation to analyze and contextualize modern trends that impact on work, professions and the society. Trending technologies featured highlighted new contexts of telecommuting practices and programmes sustained through digital transformation. Emerging technologies have transformed the modern working environment and moved work practices to the comfort of the digital nomads - Generation Z and Millennials. African organizations and professionals can easily sustain virtual working arrangements as exemplified through high speed internet connections and massive penetration of mobile devices.

Telecommuting researches have been done and implemented in developed countries as opposed to developing ones. In developed nations and continents, elaborate digital transformation policies and strategies including legal frameworks and regulations have been adopted and integrated in mainstream teleworking programmes. Implementation of legal and policy frameworks and standards are required for successful realization of virtual working environment. The Northern American countries have well planned and managed teleworking arrangements and agreements. The augmentation of loss of manpower as a result of heavy and endless hustles of traffic jams common in developing nations and continents can be addressed through digital transformation policies. Most important, the range of strategies and emerging technologies for digital telecommuting transformation should emphasis on human values. From this research, several authors agree that technology integration is a fundamental mediating strategy for successful implementation and realization of emerging digital and mobile teleworking programmes. Potential positive social impacts of virtual teleworking arrangements require trending technologies to transform the manner in which telecommuters work in organizations.

CONFLICT-OF-INTEREST STATEMENT

The authors of this publication declare there is no conflict of interest.

FUNDING INFORMATION

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors. Funding for this research was covered by the author(s) of the article.

REFERENCES

- Ammar, A. (2020). Can COVID-19 mitigation measures promote telework practices? *Journal of Labor and Society*, 3, 551–576.
- Angel, B., & Amaya, E. (2020). Teleworking in the context of the Covid-19 crisis. *Sustainability*, 12(9), 3662. doi:10.3390/su12093662
- Anwar, M. A., & Graham, M. (2020). Between a rock and a hard place: Freedom, flexibility, precarity and vulnerability in the gig-economy in Africa. *Competition & Change*, 0(0), 1–22.
- Cecilia, B., Ingela, B. & Joel, H. (2021). Telework and lifelong learning. *Frontiers in Sociology*, 6, 642277.
- Chrisalena, A., & Georgios, T. (2021). Telework: Systematic literature review and future research agenda. *Heliyon*, 7(10), e08165. doi:10.1016/j.heliyon.2021.e08165 PMID:34703928
- Dingel, J., & Neiman, B. (2020). How many jobs can be done at home? Academic Press. doi:10.3386/w26948
- Eurofound. (2020). COVID-19: Policy responses across Europe. Publications Office of the European Union. doi:10.3386/w26948
- Eurofound. (2020a). *Telework and ICT-based mobile work: Flexible working in the digital age*. Publications Office of the European Union.
- Eurofound. (2020b). *COVID-19 could permanently change teleworking in Europe*. Author.
- Eurofound. (2021). *COVID-19: Implications for employment and working life*. Publications Office of the European Union.
- ILO-OECD. (2020). *The impact of the COVID-19 pandemic on jobs and incomes in G20 economies*. OECD Publishing.
- International Labour Organization (ILO). (2020). Teleworking during the COVID-19 pandemic and beyond: A practical guide. *Journal of Human Resources Management*, 1(2), 207–220.
- Lina, V., & Nantapong, B. (2021). The impact of working from home during COVID-19 on work and life domains: An exploratory study on Hong Kong. *Policy Design and Practice*, 4(1), 59–76.
- Longqi, . (2022). The effects of remote work on collaboration among information workers. *Nature Human Behaviour*, 6, 43–54. PMID:34504299
- Lund, S., Cheng, W. L., André Dua, A. D. S., Robinson, O., & Sanghvi, S. (2020). *What 800 executives envision for the postpandemic workforce*. McKinsey Global Institute.
- Mihoko, H., Lauren, R., & Diane, Z. (2021). Reshaping perspectives on flexible work: The impact of COVID-19 on academic library management. *Portal (Baltimore, Md.)*, 21(4), 695–713.
- OECD. (2019). *Measuring the digital transformation: A roadmap for the future*. OECD Publishing.
- OECD. (2020). *Productivity gains from teleworking in the post COVID-19 era: How can public policies make it happen?* OECD.
- OECD. (2021). *Teleworking in the covid-19 pandemic: Trends and prospects*. OECD.
- Samek Lodovici, M. (2021). *The impact of teleworking and digital work on workers and society*. Publication for the Committee on Employment and Social Affairs, Policy Department for Economic, Scientific and Quality of Life Policies, European Parliament.
- Sostero. (2020). Teleworkability and the COVID-19 crisis: A new digital divide? European Commission, JRC121193.
- Susan, S. (2020). *Optimizing data and new methods for efficient knowledge discovery and information resources management: Emerging research and opportunities*. IGI Global.
- Yuhuan, C., Chungjen, C., & Li-Fang, S. (2021). Telecommuting during the coronavirus pandemic: Future time orientation as a mediator between proactive coping and perceived work productivity in two cultural samples. *Personality and Individual Differences*, 171, 110508. doi:10.1016/j.paid.2020.110508 PMID:33191964