

Telecommuting and Teleworking (Teleportability): A Sustainable Socio-Economic Transformation Mechanism in the Post COVID-19 Era

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Abstract - Organizations, societies, and economies are the scope of sustainability in every community. The growing realization of electronically-enabled business as critical drivers of sustainable economic growth and development especially during crisis is no doubt propelling nations into harnessing the benefits of enterpreneurial transformation in the 21st century and post covid-19 era. Teleworking and Telecommuting are technologies that have the ability to enable ubiquitous digital service transmissions needed to combat and curtail the prevalence of pandemics such as Covid-19. Capabilities of telecommuting can be effectively utilized to address the challenges associated with Covid-19 presently and in the post covid-19 era including threats in war-turned geographical spaces. However, there is the paucity of such knowledge, orientation and awareness amongst entrepreneurs, industries and companies in developing countries like Nigeria. This lacuna, if properly bridged will help unpack the link between production, consumption and service delivery in an emerging economy. This paper examines the notional impact of the concept of telecommuting and teleworking as a mechanism for a sustainable economic transformation and global repositioning of the work force beyond the covid crisis. Furthermore, it analyzes and juxtaposes the readability of business environments to ensure their employee's safety in the work place and remote working, thus providing continuity to economic, productive and business activity. This conceptual study uses the interpretive paradigm, through deductive analysis to draw the conclusion that there is a very poor level of deployment of telecommuting and teleworking models in countries like Nigeria during crisis and pandemics and therefore recommends that organizations adopt this mechanism to propel safety of the workforce and reduce cost. With the approval for the operation of the 5G network in the Nigerian telecommunications space, entrepreneurs can explore the gains to sustain remote working or working from home in the post-covid-19 era.

Keywords: telecommuting, teleworking, mechanism, sustainability, transformation, entrepreneur, covid-19, 5g.

I. Introduction

COVID-19 is not the first pandemic the world had seen nor will it be the last. In the past, some dangerous diseases like Black Death/Bubonic Plague, Cholera, Tuberculosis, Smallpox, HIV/AIDS (still without known cure), Spanish flu, Yellow fever, SARS, Bird flu, Ebola, Swine flu amongst others has had high impact on the global population. The recent spread of Coronavirus Disease (Covid-19 pandemic) at its peak between 2019 and 2020 with sketches still prevalent everywhere and which is attributed to Severe Acute Respiratory Syndrome (SARS) has caused substantial changes in the lifestyle of humans, societies, organizations and nations all over the world. Yushan, Gurkan, Mika and Madhusanka (2020) reported that "By the end of June 2020 over eleven million positive cases of COVID-19 were recorded, causing over 500,000 deaths worldwide leaving countries to face a number of healthcare, financial, and societal challenges".

In order to mitigate against the spread of the virus, governments of nations imposed strict restrictions and control on travel and movements within, outside and between countries. Schools were closed, cities were isolated and public interactions were curtailed and are still being relatively curtailed as a result of variants such as the London, Indian and Delta, Omicron and several new variants, thus affecting the regular lifestyle of people. Health and hygienic measures and policies were taken by Governments in most countries as guidelines on social distancing, hand washing/sanitization and use of facemasks and or face shield to prevent the spread of the virus.

According to Ebri and Bassey (2021), "These restrictions and ban negatively affected the world's economies which led to collapse, bankruptcy and shut down of some industries and organizations, introducing the concept of working from home or remote locations known as telecommuting, teleworking and telecomputing".

Yushan et al., (2020) posited that "while the remote work was considered as an alternative with limitations, certain jobs

became obsolete. Apart from that, governments' expenditure on the unemployed workforce, losing income from sectors associated with tourism such as airlines, hotels, local transport, and entertainment were major challenges for the economies".

Technological advancement is one of the key strengths in the current era to overcome the challenging society's burden such as covid-19 outbreak. The timely application of relevant technologies and innovations will be imperative not only to safeguard, but also to manage the post-covid-19 world economy. According to Yushan et al., (2020, paraphrased), "The novel ICT technologies such as Internet of Things (IoT), Artificial Intelligence (AI), Big Data, 5G communications, cloud computing and blockchain can play a vital role to facilitate environmental sustainability, fostering protection and improvement of people and economies. The capabilities they provide for pervasive and accessible services are crucial to alleviate pandemic related problems".

As a technological innovation, "5G communications presents a paradigm shift from the present mobile networks to providing universal high-rate connectivity and a seamless user experience.

Nature, this time through a virus (so difficult to handle), has hit us so hard, lethally and only apparently without warning. The covid-19 pandemic will be remembered for many things and among them will be that economies of countries were never the same anymore. In corporate employment, most of the white collar employees will have their offices at home and will be paid according to the tasks they complete.

The reality of the 21st century is that people working from homes and remote locations need a fast internet spectrum. Here, comes the gap to be filled by the 5g network.

Teleworking and telecommuting are two very closely related concepts that can easily be used interchangeably. We will make a concise distinction of these concepts in Literature the review.

Although there is no universally accepted definition of telework, it can be described as a type of work and/or provision of services done remotely, at a distance, and online using computer and telematics technologies. According to the International Labour Organization (ILO) (2020), "telework is defined as the use of information and communications technologies (ICTs), such as smartphones, tablets, laptops, and/or desktop computers, for work that is performed outside the employer's premises". In other words, "telework implies work achieved with the help of ICT and conducted outside the employer's location" (Angel and Amaya, 2020).

Despite several authors focusing on the definition that links telework with the idea of working at home, telework just involves working outside of the employer's premises with the support of ICT, and, therefore, it can occur from multiple locations (home, office, and other places) using different technologies (such as mobile systems) and with different frequencies. As an example of these modalities, the Statistical Indicators Benchmarking the Information Society (SIBIS) in 2003 defined four different modalities of telework: telework from home, mobile telework, freelance telework in SOHOs (small office/home office), and telework done in shared facilities outside of the organizations and the home.

In fact, "telework allows workers to work at home, from shared facilities, at customer sites, or via any platform that has the required technologies. Consequently, the facilities used (technology) and the location determine the measurement and the telework concept" (Angel and Amaya, 2020).

At her 50th anniversary, Xerox launched a smarter solution for remote working on the 4th of March, 2022. This is an evidence of the new normal in technology for the 21st century post covid-19 and similar crisis era.

II. Aim

The aim of this paper is to examine the viability of deploying telecommuting and teleworking as a socio-economic transformation mechanism in the phase of Covid-19 pandemic and the economic implications in a developing country like Nigeria. It further analyzes notions as it relates to health, safety of the work force and benefits of remote working beyond the 21st century.

This paper is divided into six sub-sections for purposeful analysis including introduction, aim, historical examination, evolutionary trend of teleworking and telecommuting, covid-19 and emerging technologies and their implications.

III. Literature Review

"Teleworking can be understood as work done remotely, through Information and Communication Technologies" (Rocha and Amador, 2018). Sakuda and Vasconcelos (2005) posited that "telework is the use of computers and telecommunications to change the accepted geography of work". Thus referring to the displacement of the work force out of the organization's work place. Teleworking and telecommuting is considered and defined in this research as 'working from home by deploying information and communication technologies (ICTs) to keep in touch with colleagues and deal with allocated working tasks'.

“Prior to COVID-19, Home – Based Teleworking (HBT) as an informal working arrangement needed a shock to make a breakthrough in its developmental process. COVID-19 became that ‘shock’ boosting the tremendous growth in telework, which is considered as a crucial strategy to mitigate the pandemic’s health-related and economic consequences” (Minh and Jimmy, 2021).

IV. Historical Examination of Teleworking and Telecommuting

The impact of any epidemic or pandemic is so devastating such that companies, businesses, organizations, institutions, economies, markets and finances are affected worldwide. For instance, in the wake of the COVID-19 outbreak, the world witnessed a standstill resulting to a downward decline of the stock market indexes (see Charts below). This led to organizations around the world trying so hard to alternatively continue their businesses or public services thereby meeting the basic needs of humanity. One of such instance was the delivery of groceries and household necessities to homes.



Chart 1: Dow Jones



Chart 2: Ibovespa



Chart 3: FTSE



Chart 4: Nikkei

Figure 1: Source: Investing.com. Retrieved April 4, 2020, from <https://br.investing.com/indices/> as cited in Schmitz, Leal and Filardi (2020)

Historically, Teleworking started during the Black Death or the first Cholera outbreaks. According to Globo (2020), “while the Bubonic plague spread to London in 1665 and Isaac Newton was recluse at the Woolsthorpe mansion, there he observed apples fallen under a tree and first thought of the law of universal gravitation”. According to Minh and Jimmy (2021), “The first concept of working far from a workplace (telecommuting) was introduced in the USA in the 1970s to handle transport-related issues such as traffic congestion and air pollution by reducing commuting between home and the workplace”. Due to the potential positive effects on urban transport, telecommuting was then considered as a travel demand management strategy. Furthermore, telecommuting brings about a host of multifaceted benefits for societies. Employees, owing to saving travel time and avoiding stress at the workplace, can gain greater working performances, higher job satisfaction, a better balance between work and life responsibilities, and more active abilities. Cities may face fewer congestions and less pollution, resulting from fewer vehicular travels. In recent times, aspects of telecommuting have been intensively researched worldwide and a wide range of alternative terminologies have been suggested including

distance work, e-work, home-office, and remote working. Among these terms, telework has been used the most, particularly by researchers coming from Europe and Asia. Since then, a lot of findings have been made and lots of technologies were created and invented. In the area of computational sciences, not only equipment and materials (hardware) were developed, but software as well. “Connecting the world through cheap and wide communication systems became true with the Internet, and now telecommunication enters the 5G era (fifth-generation wireless connection), allowing a high-speed response of machines to human commands through IoT (Internet of Things)” (Chen, 2020 paraphrased).

Technology has improved the way we do business and survive. Teleworking, or working out of the main workplace, is today a reality carried out by hi-tech telecommunication and Artificial Intelligence (AI) at feasible costs. AI benefits the telework of several businesses and public assistance areas, from human health like hospital pre-online triage by AI to diagnose COVID19 symptoms, and epidemic tracking like global count of people infected by the new Coronavirus using Big Data in the Google Coronavirus Map to the support of negotiation processes between distant stakeholders through efficient video-conference systems like Whatsapp, Skype, WebEx, Facebook survey and many others.

Naturally, humans find it difficult to work remotely, but pandemics and crisis has made people and organizations exercise their flexibility to migrate rapidly to new ways of performing their jobs, using tools that, indeed, were already there, but not under full usage.

V. Evolutional Trend of the Search of the Concept ‘Teleworking’

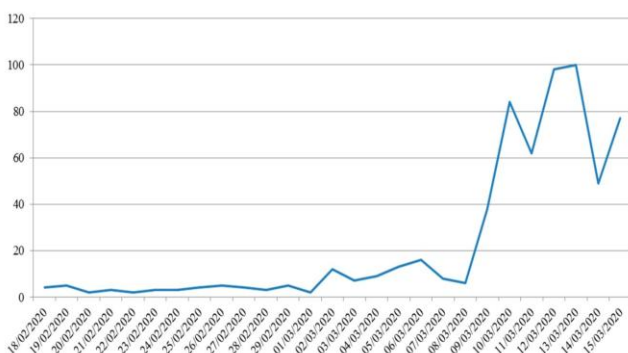


Figure 2: Evolution trend of searches for the term ‘teleworking’. Source: Google

Although the term ‘teleworking’ has been in existence for decades, it became a concept for research as an alternative to working in physical location during the beginning phase of the covid year. The chart above shows a relatively steady

progression as to the number of searches between 18th February, 2020 and 1st March, 2020 and a geometric rise between the 2nd of March, 2020 and the 15th of March, 2020. Thus proving the growing concern amongst researchers, scholars and organizations to adopt the concept as a mechanism for the new normal.

VI. Covid-19 versus Emerging Technologies

Crises accelerate history and existing trends corroborating the assertion that ‘necessity is the mother of invention’.

The Covid-19 outbreak will most certainly define the history of the 21st century by significantly affecting the direction and development of human civilization. A comparative look at the value and return on investment of working at a place of work and working from home shows a less than 50% return on investment due to several factors as against the gains of working from home (see the quadrant in fig 3). As a worldwide global phenomenon, its reach can only be comparable to the Second World War. Reflecting on the consequences of covid-19 and the level of concern, people are pushed to talk about it, share ideas and posit myths. One of this idea and or myth is the fact that the 5G technology is the cause of the novel strain of Coronavirus popularly known as covid-19. Somehow, as a result of the coincidence of time.



Figure 3: Value of working from home. Source: LinkedIn post 11th March, 2022

During the covid global pandemic, digital technologies have become a critical enabler of connectivity facilitating the continuity of man's regular life and connecting people more than ever before, turning people to their computers and smartphones as a lifeline tool. "Some of these habits may continue as the "new normal"- or at least until a long-term solution to the current challenges, such as an acceptable, harm-free vaccine, is found. Hence, the need to access a reliable digital infrastructure has become increasingly important, and certain aspects of ICTs are critical in a period of isolation, such as increased ICT opportunities from telework, telemedicine, food delivery and logistics, online and contactless payments, remote learning and entertainment" (ITU, 2020).

VII. The Use of Teleworking in Pre, During and Post-Pandemic by Organizations

COVID-19 pandemic, gave organizations the expression 'New Normal' referring to the reality of dealing with pandemics, which includes the increased use of technology to assist organizations in carrying out their operations. McNamee and Diamond (2004), Hinssen and Chellam (2010) used the expression to describe "the concept of digital businesses during pandemics".

The 'New Normal' is a challenge to organizations and people in general. To organizations for instance, "it is timely to evoke the dynamic capabilities for such situations of changing preparedness and management" (Easterby-Smith, Lyles and Peteraf 2009).

VIII. Methodology

In examining this conceptual study on teleworking and telecommuting as a veritable tool during pandemics, ideas were elicited and analyzed using questionnaire applied online via the Google forms tool. Responses were further analyzed showing 76% adoption of teleworking during the wake of the covid-19 crisis and the subsequent global lockdown.

The scope and population of this study is the small and medium scale businesses and enterprises in developing countries like Nigeria. A simple random survey through internet searches and report review was adopted as a methodology to analyse the poor use and implementation of telecommuting and teleworking platforms by the 150 SME's accessed in Nigeria. This empirical analysis is based on qualitative information published in the period of maximum risk because of the coronavirus disease. Secondary sources of information were gathered such as from companies' websites, specialized economic journals and economic press, among others. A search of companies that implemented teleworking

as a measure to face the crisis generated by Covid-19 was also gathered and analyzed.

IX. Discussion of Results

Teleworking and the Paradigm Shift: The Nexus for the 21st Century Entrepreneur

A variety of forms of social distancing and lockdown have been applied, such as maintaining a distance between persons in public places, closure of schools/universities, canceling public events, and restricting going out for unnecessary purposes. Such measures have triggered a profound shift from physical to virtual forms for familiar and industrial activities. A typical example is home-based telework (HBT), which enables a dramatic reduction in face-to-face communications in workplaces. A wide range of companies from different sectors either required or allowed their workers to perform HBT. This study observed that the average rate of working from home was 0.86% of the days per week prior to COVID-19 but became 2.4% of the days per week during the first wave of the pandemic.

This is in line with the Australian evidence as reported by Minh and Jimmy (2021) who stated that "recent research carried out in developed countries in Europe and the USA emphasized the need for the growth in implementing teleworking".

Furthermore and according to Angel and Amaya (2020), "The expansion of Covid-19 has caused a crisis in both health level (characterized as a pandemic by the WHO) and an economic level because of the economic contraction expected in most countries affected by this virus".

So far, there have not been significant cases of the implementation of telework as a result of a health crisis, and, therefore, this is an unprecedented situation where most organizations (both companies and public organizations have asked their employees to work remotely from home as teleworkers. Health measures of forced confinement of citizens have spurred the extension of teleworking in a high number of organizations. Due to the exceptional circumstances from the spread of Covid-19, it can be considered that the call for teleworking is forced by the circumstances. "If the Covid-19 related health fears did not exist, most of these companies would not have implemented teleworking practices in a massive way" (Minh and Jimmy, 2021).

The fact is that global attacks, related to environmental issues such as climate change and ozone layer depletion or risks from new illnesses due to unbalanced equilibrium among species can be considered drivers of teleworking.

Additionally, on the one hand, telework allows the continuity of the organizational activities and on the other, telecommuting guarantees the workers' collective health. The adoption of telework by companies and institutions was surely a result of a 'force majeure' event, given the exceptional circumstances that have surrounded the coronavirus crisis. Furthermore, it should be highlighted that by adopting telecommuting, companies are preserving employees' health, and they are minimizing the labor risks of employees. Minh and Jimmy (2021) also stated that "In the current crisis resulting from Covid-19, physical contact and presentality have been considered as high risk activities for the health status of the employees, and, therefore, telework has solved the problem of continuity of the business activity under a mix of heterogeneous national norms that regulate professional activity in terms of health and labor security".

To sum all up, the Covid-19 crisis has demonstrated the lack of contingency plans in companies and organizations to respond to external factors like a pandemic leading to a reorganization of work. In parallel, this crisis has made teleworking and its potential more visible. In this regard, teleworking can be considered a response to the post Covid-19 crisis because it satisfies the contingency needs of companies.

Manufacturers, traders and consumers can now reach the market more quickly and get more information than they could ever before. The electronic commerce and electronic business has penetrated businesses in many ways. The penetration of teleworking and telecommuting will tremendously reduce the transaction costs tied to purchase, sales, operations, holding inventory and financial cost. The application of these mechanisms will influence the potential global market and sales revenue, product, potential new customers and services.

In this era of teleportability (a combination of teleworking and telecommuting as coined by these authors), there are often no face-to-face customer contacts. There may be no employees or human intervention and no identifiable physical location for either the giver or receiver of services.

The second critical aspect of teleportability is safety and security. "Lack of security is the leading barrier to widespread commerce on the Internet due to the inherent openness of the web" (Wen, 2001). The lack of security is experienced in several ways such as unauthorized use of corporate network, packet sniffing, data modification, unregistered transactions, eavesdropping, repudiation and spoofing. "The threats and attacks to Internet based enterprises have included such Yahoo, E-trade and Amazon.com" (Sussan and Kassira, 2003). These threats and attacks deteriorated the three main aspects of security which are confidentiality, integrity and availability of data. The absence of these three elements

causes lack of confidence for wider customers doing business electronically.

However, some necessary actions have been taken to cushion the lack of security in teleworking like the introduction of new protocol version (Internet Protocol version 6 - IPv6). This new protocol will address the areas of confidentiality, data integrity, non-repudiation and selective application of services.

X. Conclusion and Recommendations

It is our earnest position that 'science and technology should be at the service of life'. This study shows that there is a tendency for the adoption of teleworking in the organizations after the experience of workplace closure and social isolation caused by the COVID19 pandemic. The post-pandemic 'New Normal' brings within part of the routine changes that include organizations' dynamic capabilities. While technological issues showed not to be a problem for migrating from the conventional work to the teleworking, managerial questions as performance measurement and technological remote support seemed to be challenges to overcome in the adoption of this new modality of work. Further researches could explore the conditions of cybersecurity, systems integration, communication protocols, and documents signatures, among others.

This paper examined telecommuting and teleworking as a veritable platform for a sustainable economic transformation index in the 21st century post covid-19 era which entrepreneurs especially in developing countries like Nigeria can explore. Furthermore, the covid-19 pandemic is much more than a health disaster. It is a traumatic event of global impact which cannot go away without enormous human, economic and social consequences. Uncertainty, pain, confusion, myths, facts twisting and distress will survive this pandemic. The question now is, for how long with the emergence of new variants.

The decline in GDP occasioned by the pandemic will be different for different economies and some regions will be deeply affected. Some regions will recover quickly, while others may take longer than ten years to revert back to their pre-Covid-19 level of growth and economy. This is a crisis where humanity must act humanly global. We are interconnected and the world will return to normal when everyone comes out of this crisis. It will be the only way to recover the freedom to live a normal life again. Every epidemic does not only test health systems, but also political, economic and religious systems. And covid-19 was no different. This conceptual study uses the interpretive paradigm, through deductive analysis to draw the conclusion that there is a very poor level of deployment of telecommuting

and teleworking models in countries like Nigeria and therefore recommends that organizations adopt this mechanism to propel safety of the workforce and reduce cost. With the approval for the operation of the 5G network in the Nigerian telecommunications space, entrepreneurs can explore the gains to sustain remote working or working from home in the post-covid-19 era.

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