Sep 14th, 4:30 PM - 5:00 PM

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Research Paper

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ABSTRACT

Remote working has been widely implemented in industry. In higher education, a gap exists in understanding how it has been implemented, particularly in under resourced universities. The purpose of this study was to explain the factors that influence remote working experiences of higher education facilitators (HEFs) in under resourced higher education institutions (HEIs). With the use of South African HEIs that are classified as historically disadvantaged, the study explained how remote working has been implemented and experienced and identified strategies that were shown to work in under resourced universities. A deductive approach to theory and an interpretivist research philosophy were employed. Qualitative data were collected through semi structured one-on-one interviews and analysed using thematic analysis. While age and gender emerged as part of the factors of influence, key findings indicate that the digital divide, digital literacy, socioeconomic standing, social support, and institutional support have a fundamental influence on remote working.

Keywords

Remote working, facilitators, under resourced universities.

INTRODUCTION

Remote working (Akanji et al., 2023; Wang et al., 2021), otherwise, also known as teleworking (Di Martino & Wirth, 1990), telecommuting (Mokhtarian, 1991), or working from home (WFH) originated in the 1980's with advancements in the enabling information technologies (Gibbs et al., 2021). These terms all stem from the idea of moving from work being done at a physical or geographical location, to work done at any (other virtual and/or geographical) location (Henry et al., 2021) than where it is conventionally done. Remote working has historically been implemented at an individual need level, where employees would request permission on a discretionary basis (Wang et al., 2021).

It was not long until the emergence of mandatory remote working after the outbreak of the novel coronavirus pandemic in 2020 (Carnevale & Hatak, 2020; Molino et al., 2020). Higher education institutions (HEIs) in South Africa were not exempt from this sudden technological practice and the challenges that came coupled with, particularly for higher education facilitators (HEFs). In the wake of the pandemic, almost all employees were mandated to work from home for some period during 2020 (Gallacher & Hossain, 2020). With most measures implemented virtually overnight across nations and companies (Liebowitz, 2020), there was little time for companies and employees alike to adjust ahead of time. Organisations had to swiftly upgrade and ensure their security and infrastructure policies were reliable and allowed for remote access (Henry et al., 2021). On the employee side, most had no prior exposure to remote working and had to therefore, make major adjustments in their homes to produce the expected levels of productivity (Franken et al., 2021).

These challenges heightened the need for more research on the remote working implementations, to understand the impact it had on those that did not participate in remote working before (Wang et al., 2021). There are multiple studies showing how remote working has impacted employees in the past when it was voluntary (Thulin et al., 2019) and during the compulsory era ushered in by the novel coronavirus pandemic in 2020 (Wang et al., 2021). There are further discussions of the impacts on distanced learning students during this time (Sosa Díaz, 2021). While this research encompasses countries with developed and developing economies, it highly focuses on South Africa as it was shown to exhibit the highest inequality characteristics in terms of resource distributions among its populations (Azionya & Nhedzi,

2021). South Africa has consistently had one of the biggest inequality gaps in the world for years (Marongwe & Garidzirai, 2021). This gap has been widened over the years due to historical events such as apartheid that continue to have an effect today (Higgs & Nyahodza, 2017). It has only served to deepen inequalities across the higher education sector with rural and historically black HEIs falling short when it comes to access to resources. In the context of education, these inequalities were borne of an oppressed and divided society that resulted in communities, schools and thus HEIs that were segregated on race. The HEIs that are classified as under resourced are those that had been exclusively allocated to black people historically, and they are almost always in predominantly black and marginalised communities (Temoso & Myeki, 2022). These HEIs are primarily located in rural or remote areas, which further contributes to the lack of access to resources – financial and infrastructural. While the formal racial policies no longer exist, these HEIs have continued to lag and have struggled to close the inequality gap (Temoso & Myeki, 2022)

As such, the aim of this study was to explain factors that influence remote working experiences of HEFs in these under resourced universities of South Africa. As part of the study's contributions, the research also details what strategies were put in place to improve those experiences. To achieve that, the inquiry poses the question, *"How do factors enable or constrain remote working experiences among HEFs in under resourced universities?"* To unpack the question, the study first identifies the factors of influence and details how existing strategies, helped improve remote working experiences among HEFs in under resourced universities. That said, the objective of the study is, *"To explain how factors enable or constrain remote working experiences among HEFs in under resourced HEIs."* The scope of the study was limited to exploring factors that influence remote working experiences of HEFs in under resourced universities in South Africa. The rest of the paper conducts a literature review on the remote working phenomenon, followed by the research methodology, findings section, the discussion of the findings, and lastly, some concluding remarks.

THE PROGRESSION OF REMOTE WORKING

As an official concept, remote working dates back to the 1980s where it was initially referred to as teleworking (Di Martino & Wirth, 1990). This has since evolved to not only refer to working at home, but anywhere where there is some connectivity to the work resources. It also includes the ability to access digital collaboration applications such as Microsoft Teams and Zoom on a mobile phone (Messenger & Gschwind, 2016). This highlights the mobility, dynamics, and the possibilities of remote working. While remote work is not a novel implementation in the workplace, its recent rapid, widespread, and mandatory implementation set it apart from previous ad-hoc remote working structures which were minimally adopted as practice (Bailey & Kurland, 2002). According to (Kossek & Lautsch, 2017), it has largely been reserved for the self-employed, upper management or higher income earners in its past implementations.

Subsequently, the ability to adjust to these everchanging times and work remotely as the new way of work, requires the appropriate technology and tools to successfully partake in it. Essentially, "it is the advancement of technology that transforms the mode of work." (Messenger & Gschwind, 2016, p. 5). This highlights the risk that is imminent when there is reduced or unreliable access to required advanced technology and connectivity, not only to successfully perform work tasks, but to accessing remote working as a way of work completely.

With the rise of Fourth Industrial Revolution (4IR), digitisation is at the forefront and was expected to radically shift the ways in which people work (Nyagadza et al., 2022). There has been a tardy adoption

rate in countries with developing economies like South Africa (Mkansi & Landman, 2021). Interconnectivity of everyday devices and systems such as smart networks, software, Internet of things (IoT), augmented and virtual reality are key manifestations of the 4IR (Chaka, 2020). It also includes to the ability to access services on the cloud and on demand (Datta, 2021). Issues of access to digital resources as well as digital literacy, are important to address to ensure inclusion of the entire labour market in remote working. It is vital to understand that those without sufficient digital access are most affected by the consequences of the world surviving on digital ways of work (De' et al., 2020).

Higher Education Institutionalisation in South Africa

In South Africa, the education landscape consists of primary and secondary education (high school), which is governed by the Department of Basic Education (DBE); and tertiary education which is overseen by Department of Higher Education and Training (DHET) (Mhlanga & Moloi, 2020). HEIs fall under the governance of DHET in South Africa. In the context of developing economies such as South Africa, socioeconomic inequalities are often present from grass roots levels. These inequalities are prevalent in communities and individuals within them and provide fertile ground for digital divide to widen (Azionya & Nhedzi, 2021).

This inequality comes to the forefront in HEIs where students from various backgrounds descend to further their education and formalise their skills. For this reason, many students find themselves inadequately skilled to transition successfully to the demand and level required by HEIs (Mokher, 2021). Research conducted in South Africa showed that there was misalignment between the quality of the Computer Application Technology subject being offered to matriculants in high schools, and the entry requirements set by HEIs (Chetty et al., 2018).

Some factors that enable and constrain remote working

Due to the previous indefinability of remote working for the general working class and the optional nature of previous flexible arrangements, there arose certain challenges presently, that would not have been a challenge in the past (Wang et al., 2021). Given that an employee would have opted to work from home in the past, the assumption is that they would have had the required technological capabilities at home to fulfil their tasks. However, with the compulsory implementation of remote working, such challenges would present themselves to employees would not have had prior access to advanced resources (Molino et al., 2020).

Digital divide

"The global digital divide customarily refers to the differential extent to which rich and poor countries have access to digital technologies and the complementary resources that are required to make effective use of them" (James, 2021, p. 23). It has resulted in a high digital inequality within developing economies (Ohemeng & Ofosu-Adarkwa, 2014) and can also be observed within micro communities. In this study, the digital divide represents an uneven distribution of access and adoption of digital technologies and resources. The term digital divide surfaced in the early 1990s. However, it was first significantly discussed in 2001, where the divide was primarily described as lack of physical access to digital resources (van Dijk, 2020). Regrettably, in developing economies such as South Africa, there has been stagnation regarding providing access to quality connectivity to society and addressing digital inequality, despite advancements and investment in undersea cabling. These issues can be attributed to lack of efficient policies at a national level (Mothobi & Rademan, 2017). In developing economies, the primary means of digital access is through mobile phone. However, limitations exist in connectivity due to the exorbitant costs of data services as well as smart devices to connect (Mothobi & Rademan, 2017).

Digital literacy

Digital literacy refers to the ability to navigate technology through digital devices and tools (Prayaga et al., 2017). Lack of digital literacy can be detrimental to individuals on the have-nots side of the divide (De' et al., 2020). Remote work resulted in unprecedented adoption of digital tools and technologies to enable the home environment to be conducive for work (De' et al., 2020). Some employees would have been using these for the first time during this time. As 4IR persists and digitalisation continues at its rapid rate in a post pandemic world (Srinivasan & Eden, 2021; Wani et al., 2022), employees and potential employees who are not adequately digitally literate, will be left behind while employers prioritise digital literacy as a minimum skill requirement (Chetty et al., 2018).

Age

One of the factors emerging to have an influence on remote working is age. The older one gets, the more less savvy one is from the ever-improving technology (Friemel, 2016). For this reason, age can also be considered as a factor that influences the ability to work remotely. This divide which specifically is among the elderly, is referred to as the "Grey Divide" (Morris & Brading, 2007, p. 4) and is a common phenomenon spanning across class or socioeconomic standing globally. This phenomenon is often linked to anxiety the elderly experience, when faced with new or changing technology. It can be due to resistance to change or the stress of being inadequate with the new technology (Peral-Peral et al., 2015). This stress is also closely related to technophobia. Research has shown how technophobia can be linked to ageing, with a higher prevalence of technophobia amongst older age groups (Faloye et al., 2022). Due the fear of technological advancements, age is anticipated to be an enabler or constraint on the extent to which one can effectively adapt to working remotely (Di Giacomo et al., 2020).

Summary

Table 1 summarises factors that were identified in literature hence the motivation of the study. From these factors, namely, digital divide, digital literacy, age, socioeconomic status, social support, home infrastructure, culture and gender, the research draws some propositions to guide the study.

Table 1

Factor	Definition/Sub construct	Proposition	Reference
Digital Divide	Includes physical and logical access to assets and enablers such as internet and socio technical awareness	Where the digital divide is prominent, challenges increase in remote working	(Azionya & Nhedzi, 2021; Bailey & Kurland, 2002)
Digital Literacy	The ability and skills to make use of digital assets and technology	A high digital literacy index improves the ability to work remotely	(Dube, 2020; Hosman & Pérez Comisso, 2020)
Age	The influence of age on the ability to work remotely	Growing older has a limiting effect on remote working	(Di Giacomo et al., 2020)
Gender and culture	The influence of culture and gender on the ability to work remotely	The ability to work remotely varies by gender	(Di Martino & Wirth, 1990; Hartig et al., 2007)
Socioeconomic standing	Individual status largely studied by income, education, and occupation	A higher socioeconomic status improves the ability to work remotely	(Nwosu et al., 2022)

Home Infrastructure	Refers to the office set up in the home	Lack of dedicated office space provides a challenge for remote working	(Iwu et al., 2022)
Social support	Connection developed through physical engagement with peers and students. Also studied under social isolation	Social support positively influences remote working	(Nickson & Siddons, 2012)

Note. A tabulation of propositions to factors influencing remote working

RESEARCH METHODOLOGY

The research question sought to understand and explain the factors that influence remote working experiences for facilitators in under resourced HEIs. As such interpretivist research philosophy was adopted to do this. The researcher needed to be able to differentiate between these contexts and be able to reconcile findings from different respondents subjectively to make better sense of the data (Bhattacherjee, 2012). In this way, the study aligned with the qualitative strategy that was applied in the data collection and analysis of this study. While the study might have sought to initially understand, in alignment with the objective to explain the factors of influence, an explanatory research purpose was adopted. A deductive approach to theory was employed as propositions based on literature were posed to guide the data collection process and analysis. Constructs were identified, proposed, and tested throughout the research process. They were further refined where new data emerged from the empirical evidence. The target population of the study was limited to South Africa to improve ease of data collection. However, in future, could be expanded to include other African countries that share similarities with these disadvantaged HEIs and communities.

Semi structured questionnaires were used to interview participants through Microsoft Teams. This was done to manage geographical limitations and to improve research reach. An interview was most applicable for this qualitative study as the open-ended questions encouraged more engagement between the participants and the principal investigator (Azungah, 2018). The ability of the questions to have varied answers also fit in with the chosen interpretive stance of this study as it assisted the researcher in understanding relationships between the factors that arise (Azungah, 2018). Data were collected and analysed by means qualitative methods as it permitted more insightful research (Sandelowski, 2000). For an interpretive study, qualitative data provided a better platform to explain the experiences of the HEFs in these communities, allowing the researcher to form connections in the findings. A total of eleven interviews were used in the analysis of this study.

The participants were sampled using a combination of purposive and snowballing strategies, where respondents were initially identified using the HEI website, where their department and roles were defined, and their contact information was available. They were purposively selected as part of the participants and asked to recommend other colleagues they deemed as qualified to participate. The interviews were conducted online and recorded. Audios were transcribed, saved as word documents that were uploaded into NVIVO, and coded for further analysis. Thematic analysis was then performed within NVIVO to accommodate the qualitative nature of this study. This type of analysis required the researcher to analyse responses, and code them into themes that prevail both from literature and in the data (Braun & Clarke, 2016). This was a rigorous and cyclical process that required the researcher to re-evaluate the data iteratively to find trustworthy conclusions (Nowell et al., 2017). All required and recommended ethical considerations were followed as mandated. As such, all private and identifiable information shared including institution and participant names, were given a unique code of reference. Once each transcript was completed, it was saved under a pseudonym to respect participant's confidentiality.

FINDINGS

The section discusses findings from the data collected. As discussed in the previous section, the research instrument in this study was a one-on-one online interview with each respondent which was recorded and then transcribed. A total of eleven respondents were interviewed, from 3 universities that were classified as historically disadvantaged or under resourced.

Descriptive findings

Majority of the HEF roles were that of lecturer or senior lecturer, and two laboratory assistants as depicted in Table 2. The target population for this study were individuals who facilitate learning in HEIs. The fact that majority of respondents are lecturers is not by chance as they are the primary population that would facilitate learning at these HEIs. They were targeted through purposive sampling as discussed in the methodology, and through snowballing, laboratory assistants were also included. The participants comprised 64% of females and included participants between the ages of 29 to 63. Majority of the participants had at least a PhD qualification, with the lowest qualification being an Honours degree.

They were a total of 3 universities participating in this study. Table 2 tabulates the demographic information about the participants. All HEIs in this study are in rural or remote areas within their provinces. They are not located within the capital of their provinces and their rurality is one of the aspects that qualified them as under resourced. They serve historically disadvantaged communities which in South Africa is predominantly black.

Table 2

Participant code	Age	Gender	Highest Qualification	Department	Role
HEI1_P1	34	Male	Masters	Computer Science	Lecturer
HEI1_P2	29	Female	Masters	Computer Science	Temporary Lecturer
HEI1_P3	37	Female	PhD	Computer Science	Senior lecturer
HEI2_P1	52	Female	PhD	Advance Nursing	Lecturer
HEI2_P2	36	Male	PhD	Social Work	Senior Lecturer
HEI2_P3	63	Female	PhD	Advanced Nursing	Senior Lecturer
HEI2_P4	49	Female	PhD	Social Work	Senior Lecturer
HEI3_P1	36	Male	Masters	Corporate Communication & marketing	Lecturer
HEI3_P2	36	Female	Masters	Biological and Environmental Sciences	Senior Laboratory Assistant
HEI3_P3	39	Male	PhD	Information Technology (IT)	Lecturer
HEI3_P4	32	Female	Honours	Biological and Environmental Sciences	Laboratory Assistant

Note. Representation of demographic information summary of participants

Emerging factors influencing remote working

Because the study managed to establish from literature, some general factors of influence for remote working, and generate propositions, it was important to examine their triangulation with empirical evidence collected. As such, the following factors were corroborated from the field data in response to the prepositions in Table 1.

Digital divide

In the study, the challenge of devices was raised, in this case, this was related to the lack of technological devices, limiting the ability to work and learn remotely. The lack of the relevant equipment resulted in curriculum delays as students and HEFs either had no personal equipment or it was not sufficient to handle the requirements of remote and online working. Most student had smartphones but not laptops or computers. These presented challenges to students as they were not equipped or conducive to learning remotely. This is due to various factors such as screen size and overall technical ability of the devices, HEIs and national financial aid schemes had to furnish students and staff with laptops and other office equipment such as routers to enable working from home. Respondent HEI3_P1 explains:

> *"Uhm, the challenges were that first we were not used and equipped with the necessary resources on how to basically conduct classes online. And so that posed a great deal of challenge. We've had to wait for resources such as computers".*

Access to data is a requirement to remote learning and that came in the form of mobile data. Without the access at all, students and HEFs were unable to connect and deliver content online. On campus, the institution's WIFI is available and eases the work for students and staff, however while at home, mobile data was not enough to sustain remote working. The regular amount of data purchased was no longer enough as it was being depleted by tools that are data heavy, resulting in challenges when the data depletes. A further challenge with mobile data was that it was capped and once it finished, it meant that HEFs could not continue facilitating as required. The alternative was that HEFs would buy additional data at their own expense. HEIs had to support students and staff by providing data on a regular basis.

According to HEI3_P1*:*

> *"Due to the lack of resources in terms of data, it would finish, you know, maybe within a week. And so, you realize that if you rely on the Wi-Fi provided, then some classes cannot be conducted and therefore you have to go on campus where there is endless, you know, data available."*

Moreover, the digital divide was exacerbated by network connectivity. Majority of respondents named this as a key influence in their ability to work remotely effectively. The lack of reliable network connection was a limiting factor in remote working. This was a challenge for students as well according to HEI1_P2:

> *"...some of them, they're from deep rural areas. They had data, but then the network was the barrier in their case."*

Electricity loadshedding

Another issue that affected remote working in many ways was loadshedding of electricity in the nation. Loadshedding is a government program aimed to reduce electricity load to maintain a constant maximum power supply capacity. During loadshedding, the supply of electricity is cut in some areas to avoid excessive load on the generating plant. As such, network connectivity in affected areas is lost during loadshedding intervals.

HEI1_P3 shared these sentiments:

> *"... when there is no network, there is nothing that you can do. And usually if there are power cuts, the network is also unreliable, which makes it difficult to deliver classes online."*

Digital literacy

Digital literacy (DL) was the second most referenced theme and came up among all the participants once more. This refers to the ability to use digital technologies and resources. In analysing the data, findings

show that digital literacy is a necessary skill to participate effectively in remote working and learning. Remote working requires one to be able to navigate the digital world through digital platforms and new devices. Without the minimum skills, the ability to work remotely is severely challenged. A statement by HEI1_P3 supports this:

> *"Currently everything that I do. So, every activity that I do at the moment, because we are still conducting online classes, so everything".*

Another sub factor in DL was lack of prior exposure and knowledge. In under resourced universities, DL came up as a challenge due largely to the fact that neither the HEFs nor the students had previously been exposed to such skills and thus had difficulty transitioning to remote work. This study showed that familiarity with technology and tools enabled a better experience of remote work by minimising the potential IT challenges. HEI2_P1 states how students from non-technical backgrounds faced challenges in adapting to remote learning:

> *"We take staff nurses, so it was so difficult with those. I remember I used to arrange meetings privately somewhere when we can meet in the… in what we call… in the restaurants so that I teach them because they were not able."*

This revealed that training had not been prioritised by HEFs or HEIs in prior years. This deficit was now catching up with the HEFs and training had to be done while simultaneously being expected to fully participate remote working. This resulted in pressure on colleagues to train each other to keep up with the demand.

HEI3_P1 expressed the following sentiments:

> *"…you're always called upon - please come and assist. You find that sometimes you spend most of your day assisting other people you know, in using a computer and you lag in terms of what you are supposed to do."*

Age

While age is somehow closely related to DL, it emerged as a stand-alone factor influencing remote working. The study established that increase in age resulted in increased challenges in adapting to remote working due to lack of the required skills. It was difficult for students who were of age when having to transition to remote learning. This was also apparent amongst the HEFs as some struggled to transition to online ways of conducting lectures. HEFs were resistant to change as they had been teaching in one way for years.

> *"Yeah, they are so resistant to change. If a person used to teach mathematics with chalk in the blackboard like this one, that's it to them. They don't want to change."* – HE12_P2

This was further supported by HEI2_P3 who identified the need to familiarize themselves with technology at their age as fundamental to facilitate remote working.

> *"I was born before this technology, so I must try by all means to make sure that I familiarize, I learn, so that I will be able to apply this so."*

Gender and culture

Gender and culture affected remote working and learning where there were expectations from the family since the HEFs or students were now physically present at home. This required a shift in family dynamics and an understanding from families that while individuals are at home, they are still taking part in remote working. According HEI1_P3:

"Yes, some of the students especially some of the female students. They had problems because now they were at home. So, they were expected to carry out different kind of kinds of activities which they were not supposed to be carrying, especially if they're online. For example, they are expected to cook for the family and to do cleaning as well as to take off at take care of Iittle ones, so they were also complaining in terms of that."

Where gender was raised as an apparent factor, it was often intertwined with culture as stated by the respondent. This raises the issue of patriarchy and that was developed as a factor that impeded remote working for female HEFs and students.

"Yeah, I think when you look at… our communities, when you look at gender, it's more of cultural because guys are not expected to do as much as girls. So, you might have our students that are still staying in the same environment and then the lady has a lot of, or the girl has a lot of chores or responsibilities? Or the guy has none or just a few responsibilities."

There were instances where gender was not seen as a key influence, largely where participants lived alone or when the new responsibilities had been introduced into the household to navigate remote working. According to HEI2_P4 there was no fundamental impact of gender on remote working as prior boundaries and household rules had been established:

"I will not even say not really. Because the moment there was the issue of lockdown, we had to change rules, you know? OK, now it's lockdown and some of us are working and let's have that schedule for cooking, for doing this, for doing that so that uhm. They don't just sit there and expect me to do everything, you know? Uh, so that made my life very easy, actually, because now we had to share responsibilities,"

Socioeconomic standing

This theme relates to the ability of participants to afford resources and access to resources. As these HEIs are often in rural and remote areas, they cater to a student base of largely low socioeconomic standing. HEI1_P3 states how a lower socioeconomic standing had a negative effect on the students' ability to take part in remote learning. Lower income households had limited access to resources. Lack of affordability of resources meant that without support, certain students were unable to attend class:

"Because the students that couldn't buy their devices, they couldn't learn, and it wasn't fair for them to be just left behind because they didn't have access."

This was supported by HEI2_P2 who said:

"At a rural based university where we accommodate students from, you know, those poor backgrounds come where in issues of poverty comes into play. Obviously if that's the case even the issues of students getting resources to connect would be difficult in a way."

These issues primarily affecting the students would have then resulted in challenges to the HEFs in terms of conducting classes with low student attendance.

Home infrastructure

Closely linked to the factor of socioeconomic standing was the home infrastructure set up of the respondents. Many noted that there was a need for a formal office environment at home. There was initially, a challenge in remodelling their home environments to proper, less disruptive, and conducive working environments. Some of those dynamics depended on whether the respondents could afford the

home infrastructure they desired at home, hence socioeconomic standing. On the other hand, the rest of factors had to do with other distractions that came coupled with working from home during the time. For instance, an environment that is quiet was found as conducive to remote working as it leads to less distractions and encourages engagement and focus on the sessions and this was supported by HEI3_P1 who expressed how students faced challenges with noise disruptions:

> *"And as such, even if they try to attend the class, there is still, you know, the distractions in the background and they can't even focus. So, coming to residences played, you know, a big role in assisting them to basically catch up and, you know, be in a conducive environment to facilitate learning and teaching."*

Likewise, a dedicated room that would be used as an office was equally important when working remotely. HEFs who did not have a dedicated place struggled with maintaining a conducive environment for working. Some resorted to converting existing rooms into offices to ensure they had a space to work. These alternative methods also presented challenges as these rooms are not created specifically for office work; however, they assisted in reducing disruptions from family members who were then aware of no-go areas during work hours. Students faced challenges of not having a dedicated space to learn at home and would have to find alternative venues.

> *"...in all of that there will always be disturbances because you stay with your family, and you don't have an office at home."* - HEI3_P1

Support

Support was an important factor in transitioning to remote work. This support related to both social support from peers, students, and family, as well as formal support from the intuition in terms of training and provision of resources. Support from HEI came in the form of subsidies for data or provision of data itself to enable remote working. While support from peers fostered collaboration and reduced the intimidating factor that came with having to work remotely and complete all tasks online. According to HE1P1 social support was beneficial because:

> *"It helps to ease the pressure and understand that you're not alone through this difficult. So, uh, socially we depended on WhatsApp, to converse, would also try sometimes some video calls and on one-on-one basis with colleagues just to catch up on things."*

HEI2_P3 stated how the supported from the institution was beneficial:

> *"The university offered students data, even the lecturers, so that it will facilitate the working from home process."*

DISCUSSION OF FINDINGS

The digital divide is a constraint to remote working as found in this study. The remote location of the HEIs was linked to the lack of technological resources available as well as unreliable network connection due to lack of infrastructure (Chetty et al., 2018). Reliable network connection and advanced devices are a prerequisite to effectively working remotely according to empirical evidence provided and existing literature (Mhlanga & Moloi, 2020). Closely linked to the divide factor, is digital literacy. Lower DL was shown to be one of the key factors negatively affecting employees transforming to remote working. The study supported the existing literature and found that low digital literacy has a negative effect on the remote working experiences of the participants (Da Silva & Behar, 2020). Lack of digital skills resulted in HEFs and students being left behind and unable to participate in remote working and learning (Bond et al., 2018). Due to their often remote location, under resourced HEIs have a challenge that reduces the level

of digital literacy (Prayaga et al., 2017). This is because of limited prior exposure to these technologies, and that unfamiliarity raises challenges with remote working for the HEFs and the students. This highlighted a close relationship between digital divide and digital literacy, something that was also prevalent in literature (Chetty et al., 2018). Remote working requires advanced devices, and associated with that is advanced skills, whose lack thereof presented a challenge for HEFs. This supports literature which states that HEFs are likely not to have had sufficient digital knowledge in how to seamlessly use digital collaboration tools available, adding to the frustration of remote working (Mathrani et al., 2021)

Findings showed that lower income or socioeconomic standing had a negative effect on the ability to work remotely. This supports literature which also showed that socio economic standing is a factor that is related to the digital divide (Mathrani et al., 2021). This relationship is shown in the data by HEI2_P2 who shared that the ability to transition to remote learning was challenged amongst students because the lower income students could not afford to buy the devices that were required to learn remotely. This speaks to socioeconomic standing through affordability, while also relating to the digital divide by reference the need for advanced technology to facilitate remote working and learning:

> *"...slowly we introduced teams to our students. But then again it was a challenge because. Uhm, uhm? Most of our students, or let me rather say some of our students, are from disadvantaged backgrounds. You know, they wouldn't afford a laptop."*

The reduced access to technology was due to the high acquisition costs required to participate in remote working. Lower socioeconomic standing resulted in students being unable to attend class where they had no means of acquiring the technological resources such as data and devices required to participate (Chetty et al., 2018).

Similarly, the study also found that the lack of appropriateness of home infrastructure is constraint to remote working and learning. This was a limitation that some participants faced due to their lack of preparation in transitioning to remote working. Findings supported literature and show that participants needed the necessary equipment and furniture that enable smooth remote working (Marongwe & Garidzirai, 2021). Another finding that corroborates literature is that, as part of infrastructure, a quiet and dedicated environment is beneficial to take part in remote working (Prayaga et al., 2017), otherwise distractions are likely to occur and constrain remote working.

Contrary to the distractions that were presented by other family members being around during office hours, the study established that support was important in facilitating remote working, in line with literature (Marongwe & Garidzirai, 2021). It further indicated that there was a need for both social (family and friends) and institutional (colleagues) support to amicably transition to remote working (Marongwe & Garidzirai, 2021).

Lastly, implications of age, gender, and culture also played a role in enabling or constraining remote work. As was shown in the findings, the likelihood of having difficulty adapting to everchanging technological advancements increased with increasing age. In the context of South Africa on the other hand, cultural norms which still predefine household roles based on gender further exacerbated the consequences for female participants. It was, however, different for those participants who reported that independent females faced less challenges from patriarchal expectations of culture.

CONCLUSION AND FUTURE WORK.

The study aimed at answering the question: *"How do factors influence the remote working experiences of HEFs in under resourced HEIs?"* This was done by first identifying the factors that are prevalent in literature to validate the research question. As a contribution to the body of knowledge on remote working,

the study provided an explanation of the interaction and relationships of the factors found in literature, with those established from the empirical case. While several factors were established and examined both from literature and empirical data, seven main factors were discussed in detail. These are the digital divide, which was the underpinning factor also closely linked to digital literacy. Factors three, four, and five namely age; gender and culture; and socioeconomic standing respectively, were then discussed next, showing how they are also linked to each other. Lastly, set up of home infrastructure and support were discussed in conclusion of the discussion section. This research will assist future research into the topic and further explore how these influences can be managed through strategies to lessen the negative factors and improve on the enabling ones.

LIMITATIONS OF THE STUDY

There was a time constraint limitation which in turn was eventually linked to having a smaller sample to carry out the study. Consequently, this study was limited to three HEIs and eleven participants. However, due to the population required being a fairly homogonous group, it is possible that the findings will remain valid even with bigger samples (Mason, 2010). Some emergent factors found, that were not significantly present in literature, were not rigorously examined due to the limited audience, hence they would have to be considered in future work.

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