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### Impacts of the Technological Divide in Facilitating Remote Teaching and Learning in the Advent of Covid-19: Case of University Students from the Pastoral Communities in Marsabit County, Kenya

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*Covid-19,  
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This study assessed the impacts of the technological divide in facilitating remote teaching and learning in the advent of COVID-19 among university students from the pastoral communities in Marsabit County, Kenya. Effectiveness of remote teaching and learning during the COVID-19 pandemic with special bias among the pastoral communities in Kenya. The outbreak of the COVID-19 pandemic was felt across the globe, and its impact radically augmented peoples' vulnerabilities in all sectors: healthcare, social and economic. Nevertheless, it is the educational systems and sector that witnessed severe vulnerabilities due to prolonged closures occasioned by lockdowns and staying-at-home measures meant to control the spread of the contagious pandemic. As a remedy for discontinued face-to-face teachings, there was an introduction and integration of ICT learning globally. However, despite the celebrated contribution of ICT in the education sector, serious limitations of the strategy still exist among developing countries due to the diverse technological divide. This study was guided by three objectives: a) Determine the experiences of the university students living among the pastoral communities in accessing remote learning in Marsabit County during the school closure, b) Establish the challenges facing the university students from the pastoral communities in accessing remote learning in Marsabit County during the school closure? c) Investigate how much learning took place through remote teaching and learning among the university students living among the pastoral communities in Marsabit County during the school closure. The study found that: a) more female students attending university among the nomadic pastoral communities 61% while their male counterparts were only 31%. For the women, education was the only way of escaping their socioeconomic miseries since they did not have any inheritance like the men. During the school closure, the students from the nomadic pastoral communities in Marsabit could not access any remote or distance learning; they were totally isolated from the others. To collect data the study collected qualitative data using an interview guide from three Focus Discussion Discussions. The raw data was organised, cleaned, and presented using quotes from the participants. The quotes were labelled to hide the identity of the respondents. The study concluded that policy interventions were critical to address the lack of accessibility and availability of education technologies as

enhancers to remote or online education among the nomadic and pastoral communities; that is the only way of ensuring no student will be left behind in the delivery of “education for all”.

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## INTRODUCTION

The emergence and spread of the COVID-19 pandemic, especially from January 2020, radically augmented peoples’ health, social and economic inequalities (Almendngen et al, 2021). However, it is the educational sector that was greatly affected. For example, the pandemic led to school closures for many weeks globally and accelerated the adoption of technology and digitalisation of education at all levels of education (Green et al., 2020). According to Bond et al. (2021), the educational sector globally marked an unprecedented turning point in 2020 due to the emergence of the Covid-19 pandemic that forced all practitioners to adopt a new educational context, remote learning, and teaching (Goudeau et al., 2021). Since its inception, remote teaching and learning have been accepted as normative the world over. Remote learning is not a new phenomenon, but due to the increased trend and adoption globally in all levels of education, it has become a hot topic, quickly gaining researchers’ attention on issues like impact, digital divide, preparedness and challenges, factors influencing acceptance of IT in education, challenges in implementing remote learning and teaching, especially among the

developing countries, usefulness, and gender disparity in technological evolution and change (Zalat et al., 2021; Shattuck, 2021). According to an empirical study by Almendngen et al. (2021), the transition from traditional face-to-face class to remote learning was not easy; for example, in the initial beginning, the study found that

*“...two weeks into the lockdown, 75% of students reported that their life had become more difficult, and 50% felt that learning outcomes would be harder to achieve due to the sudden shift to online education...”*

Whilst the world seems to have settled on remote learning as a way of mitigating the crisis brought on by the pandemic, the challenges experienced cannot be ignored.

One of the many concerns catching the imagination of researchers is the unequal access to digital tools, familiarity, use and skills critical for navigating digital tools for educational purposes. For instance, in sub-Saharan Africa, before COVID-19, teaching and learning inclusion of information and communications technology (ICT) skills was not universal in the education sector (Carey, 2020). Therefore, as concluded by Azubuike et al. (2021), the technological terrain is not even global. For example, among most sub-

Saharan African countries, there are challenges like restricted availability of electricity and mobile coverage, skewed digital literacy and access to digital tools, and demotivated teachers. According to Tadesse and Muluye (2020), whilst ICT has successfully stood in the gap in regard to sharing and information facilitation, the issue of the digital divide is too troubling to be ignored,

*... ICTs have become key enablers for facilitating information sharing, continuing business operations, and delivering remote or online education; however, in having said this, the issue of unequal diffusion and adoption of ICTs cannot be ignored. While the pandemic highlighted the importance of the digital economy, it also uncovered different forms of digital divides that exist among societies in developed and developing countries ...*

Without addressing all the forms of digital divides, especially among developing countries, the importance of ICT in remote learning will be left to a few, especially during the COVID-19 pandemic. Accordingly, Carey (2020) and Mathrani et al. (2020) propose critical measures to address the digital divide, especially the inequities arising from unequal access, usage, and gender divide, for the realisation of more technological inclusion and diffusion in all sectors. All stakeholders, therefore, must angle their efforts towards enhanced accessibility, inclusion, engagement, and guaranteed digital equity for all during the pandemic.

### Statement of Problem

This study investigated the implications of the technological divide in facilitating remote teaching and learning in the advent of COVID-19: a case of university students from pastoral communities in Marsabit, Kenya. Evidently, the utilisation of educational-technologies capabilities is critical in driving remote teaching and learning. However, access to the technologies is skewed; therefore, the lack of access to adequate educational technologies is responsible for the disparity in Higher Education (Ochieng & Ngware, 2023). Thus, regions with powerful technological infrastructures do well in remote

teaching and learning. In that regard, during the Covid-19 pandemic, schools embarked on online and remote learning. The experience was not the same; in the regions with low or poor technological infrastructure, the learners were compromised in that their access to the lessons was not adequate. So, due to the local digital inequities in education, the rollouts were also unequal (Goudeau et al., 2021). It is against this background that this study attempted to investigate the impact of the technological divide in facilitating remote teaching and learning among the pastoral community in Marsabit, Kenya.

### Research Questions

- What were the experiences of the university students living among the pastoral communities in accessing remote learning in Marsabit County during the school closure?
- What are the challenges facing the university students from the pastoral communities in accessing remote learning in Marsabit County during the school closure?
- How much learning took place through remote teaching and learning among the university students living among the pastoral communities in Marsabit County during the school closure?

## LITERATURE REVIEW

### Theoretical Framework

This work was guided by system theory. According to systems theory, individuals and communities should be integrated; that is, they do not live in isolation but constantly interact (Chaney et al., 2020). Indeed, for system theory to work and function as a whole, there is a need to create an ecosystem that allows equitable distribution of resources. The theory of social system helps explain the impacts of marginalisation of the pastoral communities (Lai et al., 2015). They cannot interact with the rest of the communities due to inequalities in the ICT frameworks. The students in the pastoral communities, therefore, cannot access remote teaching and learning due to a lack of internet

capabilities. That means, in the end, they will be left out by the other students from more developed regions Mele et al., (2010). Without the due interventions to fill the gap, inequality will lead to serious development issues among the pastoral communities, whereby they will continue living in absolute poverty and marginalisation. Therefore, according to the claims of the system theory, for the pastoral communities to develop like the other citizens in the other regions, they must access adequate information, communication technology, knowledge, and skills to make their own livelihoods sustainable (Ochieng and Ngware, 2022).

### Empirical Review

The COVID-19 pandemic is a new coronavirus that causes acute and severe respiratory conditions commonly referred to as COVID-19 (Affouneh and Khalif (2020); there is consensus globally that the highly infectious pandemic originated in Wuhan, China (Almendingen et al., (2021). So far, the pandemic has ravaged all the countries the world over at unprecedented measures and has no cure; social distancing use of masks and vaccines is seen as the current effective mitigation (Desalegn, 2021; Quaiife et al., 2020). The adverse impact of Covid-19 is summarised perfectly by Yaya et al. (2020) by stating,

*The COVID-19 pandemic has ushered in a new climate of uncertainty, which is fuelling protectionism and playing into nationalist narratives. Globalisation is under significant threat as governments scramble to reduce their vulnerability to the virus by limiting global trade and flows of people. With the imposition of border closures and strict migration measures, there have been major disruptions in Africa's global supply chains with adverse impacts on employment and poverty.*

The pandemic caused unprecedented uncertainties in all sectors: disruption of the schools' calendar and mode of education, unemployment due to layoffs, poverty, and reduced trade owing to prolonged lockdowns. Sectors like agriculture, tourism and the hospitality industry in developing

countries were brought to an almost total halt, resulting in unprecedented numbers.

In a very significant way, the COVID-19 pandemic negatively affected the educational sector at all levels due to repeated closures (UNESCO, 2020). For example, countries like Italy and Germany experienced the total closure of all their schools as a strategy for mitigating the spread of the pandemic (Vampa, 2021). The spread of COVID-19 in sub-Saharan Africa was worsened by factors like resource limitations to facilitate diagnostic testing, poverty, illiteracy, myths, retrogressive cultural beliefs and poor attitude towards the pandemic, dissuading people from seeking healthcare services leading to lack of diagnosis or underdiagnosed altogether (Verschuur et al., 2021). As a way of continuing with teaching and learning, the school world has turned to the digitalisation of education, which entailed the utilisation of ICT to facilitate teaching and learning. Among the developed countries, digitalisation of education was an adequate strategy or alternative to continue with teaching and learning. However, in developing countries, the adoption of ICT worked well only for the regions closer to main towns. Therefore, those in the remotest areas had real problems accessing remote teaching and learning; in particular, the students from nomadic pastoral communities were the worst hit by the technological divide (Ochieng & Ngware, 2023).

Empirical studies did not address obvious gaps like the implications of not accessing information communication technology services. Instead, the empirical studies celebrated the digitalisation of education as if all regions of the world enjoyed equitable access to digital services. Moreover, the literature failed to discuss the policy gaps and how those gaps can be closed. These are the gaps this study attempted to close by exploring and evaluating the implications of unequal access to online services that drive online learning (Olanrewanjue et al., 2021).

### The Technological Divide Among the Nomadic Pastoral Communities

Adequate education is fundamental for all forms of advancements in society; for example, there can be no meaningful technological, sociocultural, economic, environmental, or political without access to quality education (Bartel, 2018). Therefore, availability, accessibility and affordability of education are fundamental for the sustainable and trajectory advancement of the nomadic pastoral communities (Ochieng & Ngware, 2023). Low access to education means the nomadic pastoral communities will remain the same while the rest of the world has moved on through the adoption of education and scientific revolutions, technological advancement, and groundbreaking innovations of the 21st century. The unilateral lockdown and, consequently, closure of schools during the height of the COVID-19 pandemic called for new approaches to teaching and learning (Vampa, 2021). The world not only recognised the critical role of technology in the education space, but it celebrated technology as the undisputed enhancer and driver of education anywhere in the world in real-time. For example, after the closure of schools, conventional methods of education were rendered dysfunctional. Therefore, technology remained the only means of facilitating student engagement, teaching, and learning in the education sector.

Due to the technological divide experienced by the nomadic pastoral communities, the availability and accessibility to education were not automatic during the schools' closure, emanating from the effects and complexities of COVID-19 (Favale et al. 2020). The real cause for the lack of access to education was their long-term exclusion and marginalisation. Undoubtedly, the exclusion led to other complications like lack of access to critical infrastructure such as electricity, modern roads, and the internet, one of the tools one needs to be connected to the world (Ochieng & Ngware, 2023).

### **The Experience of the University Students from The Pastoral in Accessing Remote Education**

As a matter of fact, nomadic pastoralist communities stand out as one of the most marginalised social groups; in that regard, their participation in policymaking is minimal due to marginalisation and social exclusion from mainstream society. In relation to access to education, the promise to give education to all citizens is not visible in the near future, especially among the nomadic pastoralists, unless drastic measures are undertaken policy-wise to end their exclusion and marginalisation (Ochieng and Ngware, 2022). The pledge to promote remote teaching and learning has been popularised rapidly by the closure of schools as an intervention to control the spread of COVID-19 (Favale et al., 2020). So, although remote or distance learning seeks to enhance more flexible access to education by all citizens, in a very particular manner, it is seen as a strategy that would serve the nomadic pastoralists more due to their lifestyle of constant migration of people and livestock (Basilala et al., 2020). However, they have not taken full advantage of learning opportunities through ICT, mainly due to a lack of access to adequate technological infrastructure. Face-to-face contact during the COVID-19 pandemic was not possible for the teachers and learners, which meant that the students from the nomadic pastoral communities for weeks and months due to a lack of adequate access to ICT facilities (Akogum et al., 2020). Indeed, the process of educating nomadic pastoralists in the context of their rapid and constant social migration has remained one of the challenges of massive proportionate because the further they go from major towns, the lesser access to ICT they will have. For example, they do not have access to adequate ICT infrastructure; this gap is exacerbated by the remoteness of most of the nomadic pastoralist groups. Finally, the education policy addressing inclusivity and accessibility in education does not reflect the interests, culture, and voice of the nomadic pastoralist communities (Albright and Powell, 2020).

## RESEARCH METHOD

This was a descriptive study; it is appropriate when studying fewer known problems like the implications of COVID-19 in remote teaching and learning. The study was conducted in North Horr Sub-County, Marsabit County. The area is an arid area inhabited by nomadic pastoralists; it has a population of 4,421 people. Due to its remoteness and lack of access to communication technology, the area was considered conducive for the study. The target population was university students from the Sub-County; the researcher identified 36 university-attending students. Due to the small number of students, the whole population was studied, so there was no need for sampling. Qualitative data was collected using an interview guide for the 3 Focus Discussion Groups made up of 12 respondents each. The researcher preferred the qualitative method because qualitative data was considered to be able to enhance a more in-depth understanding of the respondents' experiences and understandings. The qualitative data was analysed using the emerging themes, patterns, and relationships; based on that, the researcher interpreted the meaning coming out. After compiling and analysing the raw data, illustrative quotes relevant to the objectives of the study were chosen, labelled, and presented. The participants confirmed the quotes to be what they said and meant before they were included in the study. Ethical considerations were applied when quoting the participants by assigning pseudonyms to them; the researcher deliberately obscured any identifying information to ensure anonymity. This study was considered necessary because virtual or online teaching and learning has been widely accepted as the norm. However, the stakeholders have not considered the implications of the unequal access to communication technology used in virtual learning. This study, therefore, explores the implications of unequal access to information and communication technologies.

## FINDINGS

### Respondents' Gender

Out of the 36 respondents, the majority (61%, 22) were female, while 39% (14) were male.

The study established that there are more women accessing higher education among the pastoral and nomadic pastoralists compared to men. The explanation given by one of the respondents during the FGDs (X15) was as follows,

*To us, education does not attract me a lot because our livelihood is dependent on livestock. Because the women are so disadvantaged due to the cultural limitations in our pastoral nomadic community, like not being part of decision-making processes, they cannot own property; they like to pursue education because, through it, they can improve their position in society and escape the cultural and social limitations. All the boys will definitely inherit wealth from their father: cattle, camels, sheep, and goats. But girls will not inherit anything, so education is their hope, and they pursue it tenaciously because it is only through education that women can break away from discrimination and poverty. Our community is closed; therefore, the women who access education will come back empowered and influence the community from within as agents of change and help in alleviating poverty and women's marginalisation.*

Access to education by women was the only way they could matter in society because culture did not give them any significant social standing.

### Objective One:

To determine the experiences of the university students living among the pastoral communities in accessing remote learning in Marsabit County during the school closure

The study revealed that the pastoral nomadic communities experienced technological inequality and a lack of access to opportunities

and facilities. This was put very clearly by one of the respondents, (M2), who stated,

*Although school closure is a global factor due to COVID-19, other communities in our country are not suffering as we do because they have access to technologies, facilities and learning opportunities. They are linked to the whole world and can access academic information from any corner of the world in real time. However, here in our remote pastoral community, we are totally isolated and marginalised. No access to electricity, internet, and any connection with the outside world. Therefore, we do not benefit from remote teaching and learning. So, we will resume education after schools reopen. That means we may be forced to repeat classes as others progress since we have not been participating in education (M2).*

### **Objective 2**

To establish the challenges facing university students from the pastoral communities in accessing remote learning in Marsabit County during the school closure

During the height of Covid-19, on-site education was impossible because schools remained closed. So, schools, especially among the higher institutions of education, turned to education technology in order to facilitate remote education as an alternative to on-site education. However, the pastoral nomadic communities did not access planned remote education due to challenges. For example (T11) stated that,

*Our communities are marginalised and isolated; we lack adequate infrastructure to connect us with the rest of the communities in Kenya and the world. Because of our remoteness geographically, we do not have access to electricity and the internet. The mainstream educational policies are not relevant to our context (T11).*

### **Objective 3**

To determine how much learning took place through remote teaching and learning among the

university students living among the pastoral communities in Marsabit County during the school closure.

The study found that during the lockdown, there was virtually no learning taking place among the students living in the remote pastoral communities. During the schools' closure, the world learned a big lesson that educational technologies are critical pathways towards overcoming the loss occurring due to school closure during disasters of remarkable magnitude like COVID-19. One of the respondents (N12) had this to say,

*We understand that educational technology has the potential to offer students support, especially when there is disruption like it was experienced during COVID-19. We are aware of what our counterparts are doing in other regions, especially in urban and semi-urban regions. However, among the pastoral communities, access to educational technologies remains highly unequal; that factor alone is one of the huge barriers towards access to online teaching and learning among nomadic pastoral communities. Therefore, we blame the unequal access to educational technology for our lack of access to online teaching and learning. We have all the skills like students in other communities to learn through online facilities (N12)*

In reality, access to educational technology among the nomadic pastoral communities is very low. In that regard, the government needs to invest more in order to leapfrog the overwhelming constraints of low access to educational technologies among the nomadic pastoral communities to enhance equal access to such facilities.

## **DISCUSSION**

More young women from the nomadic pastoral community access higher education compared to the young men. One of the motivations for the variance was that higher education was seen as the pathway for escaping the cultural limitations

levelled against women in the pastoral communities' cultural worldview. For example, in the nomadic pastoral community, women have no access to decision-making and policymaking, and they are deprived of basic freedoms and rights like owning property (Albright and Mwangi-Powell, 2020; Carlan et al., 2021)). Students living in nomadic pastoral communities were not able to access the education technologies required to drive online education, which meant a lack of access to teaching and learning from the online platform. Such a state of affairs was blamed on isolation and marginalisation by the planners, providers, and policymakers (Basilaia, 2020). Thus, the students living in the nomadic pastoral communities did not access any learning during the COVID-19-related closure of schools (Martin, 2020).

## CONCLUSION

At the global level, teaching and learning were severely disrupted by the closure of schools during the height of COVID-19 as a strategy to militate against the spread of the pandemic through human contact. The utilisation of educational technologies was employed the world over as a way of accessing teaching and learning. However, access to teaching and learning failed among the students from the most deprived and disadvantaged communities, like the nomadic pastoral community. Mitigations of lost learning mostly required access to the internet and connection to electricity, but remote nomadic pastoral communities lacked access to such facilities. Therefore, the lack of access to teaching and learning among the nomadic pastoral communities cannot be blamed on the citizens themselves but on the policymakers and service providers. The students living in the remote pastoral communities had the necessary skills and were willing to access teaching and learning facilities like their counterparts from the developed regions. Makers and providers of the basic education infrastructure should aim for more inclusivity and equal access to such facilities among all regions and communities. Finally, the low uptake of the remote and online learning

ecosystem cannot be blamed on the community's cultural framework and behaviour but on the skewed provision of the required services and education technologies infrastructure.

## Recommendations

- Document the experiences of the university students living among the pastoral communities in accessing remote learning in Marsabit County during the school closure.
- Establish the challenges facing the university students from the pastoral communities in accessing remote learning in Marsabit County during the school closure.
- Despite celebrating the digitalisation of education, stakeholders should establish how much learning takes place through remote teaching and learning among the university students living among the pastoral communities in Marsabit County during the school closure.

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