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# Elements for Developing a Value-Added Digital Services Model for Rural Entrepreneurs in Namibia: An Exploratory Study

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## Abstract

*Supporting digitally enabled entrepreneurship in rural areas requires a holistic approach to ensure rural entrepreneurs take advantage of digital services finding innovative solutions that allow businesses to thrive in competitive markets. In the absence of a model for value-added digital services for rural entrepreneurs, it is uncertain what type of digital services should be offered for rural entrepreneurs once the challenges of connectivity, electricity and digital skills have been addressed and whether those digital rural services are responsive to rural communities' needs and aspirations. The purpose of this study was to explore elements to be considered when developing a Valued Added Digital Services Model for Rural Entrepreneurs in Namibia. The study applied a cross-sectional survey using a mixed-method to collect data from 134 respondents comprising 14 rural entrepreneurs and 63 members from four rural communities and 57 ICT sector key informants. The results elucidated that, Digital Infrastructure, Digital Skills, Digital Inclusion, Digital Services and Digital Actors are the five key elements for the model. The study proposed a conceptual model that facilitates the understanding and underscore the effectiveness of an ecosystem approach that is embedded in drivers and pillars of a thriving entrepreneur and proposes interventions to mitigate the barriers for effective adoption of digital services by rural entrepreneurs.*

**Keywords:** Rural entrepreneur; Digital entrepreneur; Digital service

## Introduction

Digital entrepreneurship has recently gained much attention and has become more relevant in the attempt to improve the socio-economic conditions of rural communities, especially in Southern Africa. Governments in the Global South have acknowledged that rural development is not meaningful without entrepreneurship activities (Abeyasinghe & Malik, 2021). Digital Entrepreneurship is an internet-enabled process that creates innovative novel business products and services (Bisht, Prakash, Saraswat & Srivastava, 2019). By extension, digital entrepreneurship is about economic actors pursuing market opportunities that exist and creating new ventures taking advantage offered by digital technologies (Nambisan, 2017). Welsum (2016) argues that besides creating new or novel internet-based services and products, digital entrepreneurship is also about bringing the digital transformation of existing business activity within a firm or the public sector.

Digital entrepreneurs are different from traditional entrepreneurs, although they possess the same characteristics their methodology differs (Nedumaran & Saroja, 2020; Nassar & Malik, 2021). Digital Entrepreneurs operate from any part of the world, with customers anywhere, including on the other side of the globe. They don't require any physical presence and contact with customers but use digital-enabled services (Balli, 2020). This new approach of doing business digitally can lead to a significant cost reduction and increase sales. Nonetheless, the studies of Bisht et al. (2019) and Lekhanya (2018) revealed the barriers for digital entrepreneurship such as awareness, skills and affordability, which hinders the full adoption of digital services. The OECD (2019) proposed a thoughtful policy initiative that builds digital and entrepreneurship skills through education, training programmes and facilitating peer-learning.

The demand for digital services in rural areas is increasing and is gaining momentum as an enabler to transform the lives of rural communities in many aspects of social and economic development (Subathra, & Selvanathan, 2019). Connecting rural communities is essential for their vitality and their aspiration to access information, to connect with the rest of the world, to access e-government services, to access the market, to do online banking transactions and harness e-learning (Cik, Zagar, & Grgic, 2018). The development of digitally-enabled rural enterprises is gaining the attention of policymakers due to the pivotal role they play in the socio-economic development fabric of developing countries.

## Study Background

The Namibian Government is converging on transforming the traditional economy into a digital economy. Generally, this will encourage entrepreneurs to make use of technology for the growth of businesses and to build societal cohesion. According to the Worldmeter in 2020, 44.8.1% of the Namibia population are living in rural areas. The divide between rural and urban is persisting and needs a paradigm shift. Saleminck, Strijker and Bosworth (2017) argue that urban areas are the digital hot spots with ubiquitous high-speed internet infrastructure such as 4G while rural areas experience low-tech internet access, with lower speeds and unreliable connections. The Alliance for Affordable Internet (2020) reported that the reality of access to the internet in rural areas from Global South countries across the world is bleaker, as about 14% of rural areas have access compared to 42% in urban areas.

Namibia's growth for mobile phone subscribers has been phenomenal with a penetration rate of over 120% (CRAN, 2020). The increase of mobile phone penetration rate in rural areas presents some greater opportunities for the digital economy by creating a conducive business environment in rural areas. Kambunga (2018) stated that the young generation uses mobile phones for their daily lives, this infers that the usage of mobile phones becomes an integral part of people's livelihood. On the other hand, even though the mobile phone uptake in rural areas is high, it is still uncertain how rural entrepreneurs make use of the available technologies to advance their digital entrepreneurship activities. Correa and Pavez (2016) caution that despite the high levels of connectivity in developed countries and the growing access in developing countries, digital inclusion in rural areas remains a strong concern. As stated by UNCDF (2021), digital entrepreneurship activities are relatively new and low in rural areas of developing countries.

The emergence of Digital start-ups has dominated the entrepreneurship discourse, it presents advantages of low barriers to entry, more porous and fluid boundaries and is cost-effective to set up (Zaheer, 2020). It is widely recognised that digital start-ups are the cornerstone of the digital economy. For example, major big digital companies such as Facebook, Google, Amazon, Uber and Airbnb, among thousands of companies commenced as digital start-ups. Start-ups are networking sites and competition platforms for aspiring entrepreneurs, mentors and advisors to connect and bring potential business ideas to the market (Zaheer, 2020).

During the 2020 Covid-19 pandemic in Nigeria, the technology (tech) - start-ups were instrumental in contributing to the economic sustenance and well-being of the people (Ajah & Ononiwu, 2021). This led to many tech start-ups emerging during this period, to proffer solutions to essential services that were disrupted by lockdown (Ajah & Ononiwu, 2021). In Namibia, start-ups are in the infant phase and relatively few. The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) project called Start-up Namibia has kicked – off in 2020, aiming to improve the preconditions for the establishment and growth of start-ups in selected regions (GIZ,2021). To complement the Start-ups initiative two start-ups namely Basecamp's and Digital Centre's are established to provide business incubation and innovation services and to provide support of Information Technology (IT) & Tech start-ups to improve digital skills for businesses and focus on vulnerable groups (girls, youth, women and people with disabilities). Simultaneously, the Centres will unlock the entrepreneurial spirit of the Namibian population through showcasing success stories, basic entrepreneurship training, capacity building and nationwide outreach programs. The focus is no longer concentrated on ensuring connectivity or availability of the internet but on the need to develop digital competency and knowledge (Cha, Park & Seo, 2020). Notable, in pursuit to mitigate the detrimental economic effects of the COVID-19 pandemic, in 2020 Start-up Namibia provided grants value NAD 15,000 for each beneficiary of more than 600 beneficiaries and in addition 1,600 small businesses received Personal Protective Equipment (PPE) to make their operation safe and secure during the pandemic.

Kamutuezu, Winschiers-Theophilus and Peters (2021) revealed that there is a low adoption of Information Communication Technology (ICT) enabled services for entrepreneurship activities by Namibian rural communities especially online marketing and online shopping and suggests a fit for purpose design for digital services that address the specific needs of rural entrepreneurs. As stated by Bisht et al. (2019), digital entrepreneurship is one of the new concepts and much talked about and there has not been enough research in the field of digital entrepreneurs providing a conceptual model to comprehend how digital entrepreneurship meets the needs of the people at the lowermost of the pyramid of socio, economic and geopolitical settings. According to Depaoli, Za, and Scornavacca (2020), the critic for models that guide the business digital transformation process is that those models are based on techno-centric approaches and are not suitable for Small Medium Enterprises (SMEs) in particular within the rural setting.

The study by Abubakre, Faik, and Mkansi (2021) advocates for a focus on the relational process of entrepreneurial activities instead of individual entrepreneurs. This connotes that entrepreneurship is the sum of an ecosystem that consists of the community, networks of relationships, resources and environment. Lekhanya (2018) argues that there is a need for the developing countries to do comprehensive research in the digitalisation of rural entrepreneurship to close the knowledge gaps for a better understanding of how digital technology operates in terms of when, how, where and why rural entrepreneurs use it. Kambunga (2018) contends that the deployment of technologies to the marginalised communities living in informal settlements without an appropriate localised technology adoption model might be futile.

## Objectives

The main objective of this study was to explore the key elements to be considered when developing a Valued Added Digital Services Model for Rural Entrepreneurs in Namibia and to suggest a conceptual model that facilitates the understanding and underscore the effectiveness of an ecosystem approach that is embedded in drivers and pillars of a thriving entrepreneur and proposes interventions to mitigate the barriers for effective adoption of digital services by rural entrepreneurs.

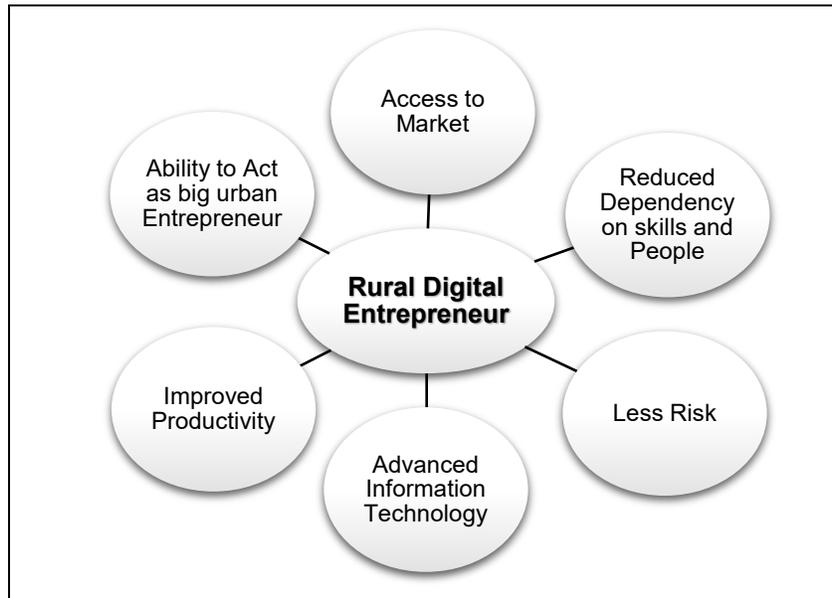
## Literature Review

### Developmental Potential of Rural Digital Entrepreneurs

The common characteristics that describe both rural and urban entrepreneurs are risk-taking, innovation, drive, capabilities, and organizational skills but the two types of entrepreneurs are differentiated by different place attributes and different local factors (Zaremohzzabieh et al., 2016). The value of digital entrepreneurs can't be downplayed, they are catalysts and visionaries who survive and grow leapfrogging digital services in value creation and value capture (Friederici, Wahome, & Graham, 2020). Digital entrepreneurship does not form a coherent, standalone sector or industry but crosscutting in all spheres of life and affects various sectors and geographical orientations. Digital entrepreneurship is a social phenomenon that involves many diverse actors and leverages socio-economic development. A key component of digital entrepreneurship is to use digital technologies to create new sources of value and wealth and eventually transform what it means to be entrepreneurial and the skills and capabilities required (Soltanifar, 2021). Digital services have clear potential to address certain inherent challenges facing rural entrepreneurs by businesses going online to gain access to wider markets and be competitive in the global economy (Wilson & Hart, 2019).

He (2019) argues that the empirical evidence from rural areas in developing countries suggest that the availability of ICT enhances social cohesion, improved communication and social networks. The new forms of reaching markets beyond the rural entrepreneur's geographic borders are perceived as a coping strategy for rural entrepreneurs to overcome various societal and economic problems in the form of economic empowerment, employment creation, food supply and social security (Lekhanya, 2018). According to Zhao and Collier (2017), the new digital technologies such as social media, big data, and cloud solutions technologies have changed the business landscape by value addition to nosiness process, product design and reducing cost for the new venture. A good example is Alibaba.com and Amazon who have helped millions of people to become entrepreneurs and in the process created many jobs and contribute to economic development. The Global Entrepreneurship Monitor (GEM) (2020), recognises the pivotality of entrepreneurship as an essential driver for wealth accumulation and a formidable engine of economic growth. Equally, GEM, (2020) perceived digital entrepreneurship as the cornerstone for economic growth, job creation, promoting innovation and addressing some of society's toughest challenges which include reducing poverty and inequality. Conversely, not all rural entrepreneurs have the same opportunities to use digital technologies and to capitalise on the associated benefits as mentioned above because access to the internet is expensive (Savira & Fahm, 2020). Many studies labelled affordability as a barrier to access thus, digital inclusion will not be achieved unless the cost factor is addressed.

### Drivers of Rural Digital Entrepreneurship



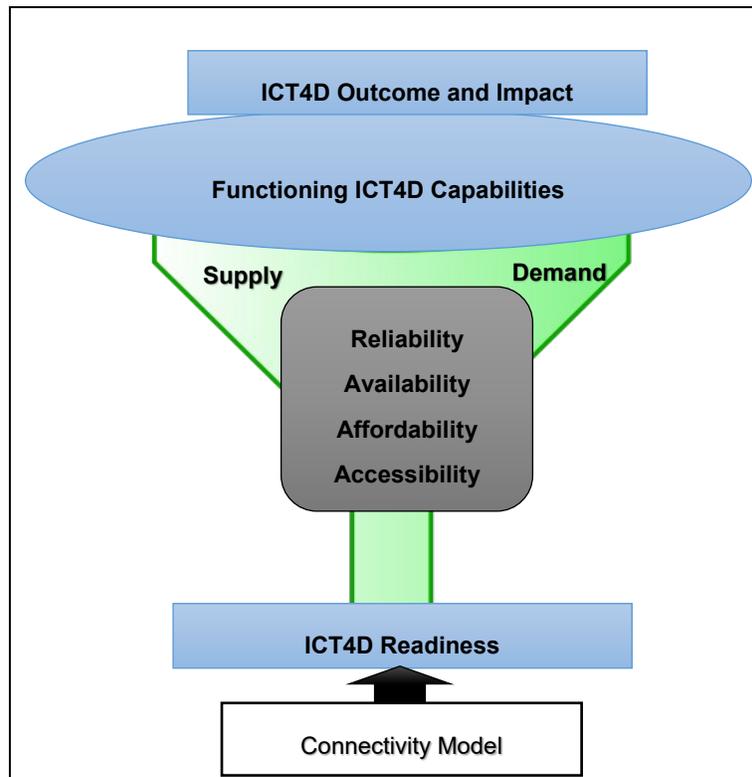
**Figure 1. Drivers of rural digital entrepreneurship (Abeyasinghe & Malik, 2021)**

Digital services enable rural entrepreneurs to access the market beyond their local geographic area and platforms such as e-commerce or online shopping create contact with suppliers and customers as this also eliminates the involvement of the middleman and intermediaries that reduce the cost and time of doing business. If rural entrepreneurs adopt digital services, the size of their business will not be a factor to compete with large and urban-based enterprises (Abeyasinghe & Malik 2021). This will allow them to have equal access to bigger markets and improve the skills of the workforce. Subsequently, this improves productivity and better flow of information for the entrepreneurs to make informed decisions about various alternatives. The usage of free available tested technologies results in less risk and low investment to do business and innovation creation (Nedumaran & Saroja, 2020). The rural entrepreneurs could use those already available free of charge a wide range of online content to reduce dependency on skills and people.

## Conceptual Framework in Exploring Rural Connectivity

The literature shows that no single model or framework is good enough to address the problem of the provision of rural digital services (Depaoli et al., 2020). Therefore, to arrive at the best suitable model various models and frameworks can be combined. Heeks (2010) critically opine that the field of ICT for Development (ICT4D) has suffered from a lack of a conceptual framework in ICT4D as researchers are mostly focussing on actions and less descriptive to analyse the phenomena impact and this frame two ICT4D views of optimistic and pessimistic. Heeks value chain model lens beyond the infrastructures diffusion and zoom in the readiness, availability, uptake and impact as a useful foundation of ICT related activities. For this paper, the Connectivity Model by Magoro, (2015) and Rural Digital Entrepreneurship Model adapted from UNCDF (2021) will be discussed. The two models reassemble the key facets of the elements that were explored during the study. They further promote connectivity (supply) and inclusion (demand) and the two are predominating factors that can shape the future of rural communities to embrace digital services.

## The Connectivity Model



**Figure 2. Connectivity Model. Adapted from Magoro (2015)**

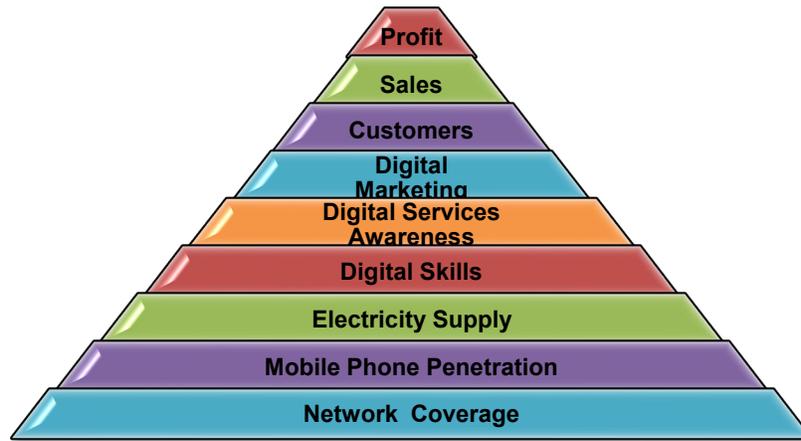
The Connectivity Model in Figure 2 amplifies Heeks's ICT4D value chain model by pinpointing the preconditions for connectivity to achieve developmental goals and also illustrates the desired outcome and the foundation required to provide sustainable and effective connectivity (Magoro, 2015). For this research, the following variables are used to analyse the effectiveness of the Connectivity Model:

**ICT4D Readiness:** The readiness is underpinned by a holistic planning approach that includes all actors at local, regional national levels. This involves the forging of public-private partnerships to mobilise resources.

**ICT4D Functioning and Capabilities:** This implies that the ability of the community to use the provided ICTs are influenced by factors such as accessibility, availability, affordability and reliability of connectivity. These factors are common and also discovered in previous studies of Bisht et al. (2019) and Welsum (2016).

**ICT4D Outcomes and Impact:** To achieve the result of capability and functioning, the impact of the outcome needs to be assessed either on a short-term, medium-term or long-term basis and intervention should be taken to reduce the barriers for positive impact.

## Rural Digital Entrepreneurs Model



**Figure 3. Rural Digital Entrepreneurship Model Adapted from UNCDF (2021)**

This model was adapted from the Digital Community Entrepreneur (DCE) Model implemented in rural areas in Uganda and is recognized for its cost-effectiveness and ability to improve last-mile distribution and long-term adoption of digital services including solar products and financial inclusion. The best approach of this model is the use of community leaders as change agents in rural areas. Thus, the model has significantly contributed by creating a conducive environment and breaking barriers to increase usage of digital solutions in rural areas of Uganda. Also, the model has been used to nurture the skills of women and youth in financial literacy and enterprise development. The pilot results demonstrated numerous opportunities for replication, adoption and scaling up of the model. The DCE model is modified and transformed into a new Rural Digital Entrepreneurship Model (RDE) as depicted in Figure 3 which is about economic actors pursuing market opportunities that exist under digital technologies' affordances (Nambisan, 2017). The pyramid of the model is cemented on facets of reliable mobile network coverage and using smart devices while also having the necessary skills to navigate the internet to market the product and services digitally that attract customers to buy the product and services to maximise profit.

## Methodology

### Research Design and Sample

The main purpose of the research was to explore the key elements to be considered when developing the model. A case study research approach was adopted for data collection, the latter approach propels empirical investigation of phenomena within their real-life context using one or more sources of data from multiple respondents (Yin, 2018). A case could be an individual, a group, a community, an instance, an episode, an event, a subgroup of a population, a town or a city and is useful when exploring an area where little is known or where you want to have a holistic understanding of the situation, phenomenon, episode, site, group or community (Kumar, 2011). The adoption of a case study afforded the study to use multiple data collection tools of a researcher-administered survey and online questionnaire survey from selected communities residing in four villages. From the literature of Creswell (2014) and Saunders et al. (2016), there are three research approaches namely, quantitative, qualitative, and mixed-method. In light of the research purpose to explore elements for the value-added model, mixed-method research approaches were adopted for the data collection process and data analysis. The effectiveness of mixed methods was ascertained by Creswell (2014) that mixed methods neutralize the shortcomings of qualitative or quantitative research methods.

The study adopted a non-probability sampling technique with convenience and purposive sampling to establish the sample size that data was collected from. Purposive sampling was used to select the four sites while the participants from the four sites were conveniently selected based on their willingness and availability to participate in the study. The key informants were also purposely selected using the researcher judgement as to who can provide the best information to achieve the objectives of the study (Kumar, 2011). with an understanding that the participants are experts and actively involved in ICT and Rural development sectors and can provide credible information needed for the study (Cresswell,2014)

The study participants were the rural communities and ICT sector Key Informants. The rural communities were from four villages (Okomumbonde, Oniipa, Bordeaux, Otumborombonga) across four regions (Omaheke, Oshikoto, Hardap and Otjozondjupa) in Namibia represented in two categories of entrepreneurs and non-entrepreneurs. The four sites were selected because mobile networks were installed in 2019 which is a year before the study was conducted from August to November 2020 and it was perceived that those users have gained better experience of using the internet for one year. The key informants were represented from various interest groups in the provision of ICT enabled services to rural areas which include Government Institutions, Private Sector, Telecommunications Regulator, Telecommunications Services Providers, Academia, Researchers Internet Society Namibia Chapter, Internet Governance Forum and community leaders.

The study had a total number of 134 respondents, comprising of 14 rural entrepreneurs and 63 rural community members from four villages (sites) combined as N=77 and Key Informants as N=57. The selected respondents were regarded as active role players (Community), affected parties (entrepreneurs) and industry experts (key informants).

## Data Collection

The study is informed by secondary data encapsulated from the literature review and primary data obtained through a survey. The variables adapted were tested and validated in previous studies of Connect Rural Areas (CORA, 2018); Lekhanya (2018); Almuwil et al. (2019); Bisht et al. (2019) and Elia et al. (2020). The survey for N=77 used a researcher-administered questionnaire with statements anchored on a five-point Likert scale. For this study besides obtaining demographic data of sex, age and employment status, respondents N=77 were presented with only one question “*In your opinion what could one consider when developing a model for rural digital services for entrepreneurs?*”. The respondents had five possible choices for each of six statements (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree). Their choices of answers were recorded by the researcher. The survey was conducted in English, Otjiherero, or Afrikaans, as chosen by the respondents.

Concerning Key informants, a total of 70 key informants were identified and approached by the researcher to participate in the online survey. The online questionnaire was developed using Google forms. Only 57 responses were received which represent an 81 % response rate. Equally, besides obtaining the respondent’s demographic data which include sex, three questions were presented to the respondents; the first question was “*Do you agree that it is necessary to develop a Model for Value-Added Digital Services for Rural Entrepreneurs in Namibia?*”. The second question was open-ended, to motivate their answer to the first question and the last question was multiple-choice to select all applicable answers from eight options. *What are the key elements to be included in the model for digital services for rural entrepreneurs?* The ethical aspects were observed as the participants’ consented to take part in and they were informed about the purpose of the study and that their participation is voluntary and not associated with any risk and the information obtained will be unanimous and confidential.

## Data Analysis

A descriptive statistics using frequency tables was conducted on each of the six variables involved in the study to help us get an inside of the responses generated by participants in the study. A descriptive statistic for six variables was examined using the Statistical Package for Social Sciences software (SPSS) to create inferences to the research participants. One of the greatest advantages of the use of statistics is the simplification of data into a more manageable size for effective analysis and interpretation (Kaur, Stoltzfus & Yellapu, 2018). Furthermore, the data was imported into Excel and analysed using thematic analysis to generate graphs. Thematic Analysis is considered the most appropriate for any study that seeks to discover using interpretations; provides a systematic element to data analysis and confer accuracy, intricacy and enhance the research’s whole meaning (Alhojailan, 2012). Braun and Clarke (2006) stated that although the thematic analysis is criticised for its poorly demarcation but is still widely used as it offers a theoretically flexible approach to analysing qualitative data useful and establishing valid propositions. The reliability and validity of data were ensured by data triangulation which refers to using multiple data sources to produce a more comprehensive view of the phenomenon being studied. Triangulation popularises combining methods that construe naturalistic and eliminate biases (Golafshani, 2003)

## Respondents Profile

The distribution of respondents according to the region, gender (male/female) and category (entrepreneur/ non-entrepreneur) are presented in Table 1.

**Table 1. Number of Participants**

Sites	Entrepreneurs		Non Entrepreneurs		Key Informants		Total
	Female	Male	Female	Male	Female	Male	
Bordeaux	0	0	1	6			7
Okomumbonde	1	4	9	11			25
Oniipa	4	2	15	10			31
Otumborombonga	2	1	6	5			14
<b>Total</b>	<b>7</b>	<b>7</b>	<b>31</b>	<b>32</b>	<b>22</b>	<b>35</b>	<b>134</b>

The respondents’ characteristics consist of sex distribution dominated by the male majority of 55% and while female respondents were 45%.

## The Essence of the Model

The ICT sector key informants were asked to state whether they agree or disagree that it is necessary to develop a Model for Value-Added Digital Services for Rural Entrepreneurs in Namibia. The majority 69% of respondents agreed that it is necessary to develop the model while 19% remained neutral and 12% disagreed. As a follow-up on the question the respondents were asked to resonate and motivate why they think is necessary to develop the model for Value –Added digital services for rural entrepreneurs. Very few 4 respondents stated that is not necessary to develop a model and cited reasons that developing a model is not a solution while the majority of respondents supported the development of the model and stated the following reasons:

- To facilitate funding and resources mobilisation
- To minimise the overlapping responsibilities of various stakeholders

- To advance the digitalisation process
- To reduce cost and increase sales
- To promote value chain and ecosystem in the ICT sector
- To identify critical success factors for rural entrepreneurs to prosper
- To promote financial inclusion
- To promote innovation for employment creation
- To enhance awareness of digital services
- To promote e-government services
- To ease doing business
- To provide spin-offs where entrepreneurs can gain additional services that they sell or offer to the rest of the rural community.

However, some respondents expressed some mixed feelings about the model and stated that not all models can work due to diverse demographic and socioeconomic factors. Therefore, a model must be customized based on local needs and environment; the model must be fit for the digitalisation process; tailored to the rural community in a language they understand and subsidizing internet costs to minimize the barriers to usage. Noting that, skills development also goes along to enhance user capability and accelerate uptake and local content will be easier for people to understand and use digital services.

### Key Elements for the Model

The Respondents N=77 were presented with six parameters (variables) as outlined in fig.4 regarding the development of a model for rural services for entrepreneurs and they were asked to present their opinion for each variable on a scale of Strongly Disagree to Strongly Agree.

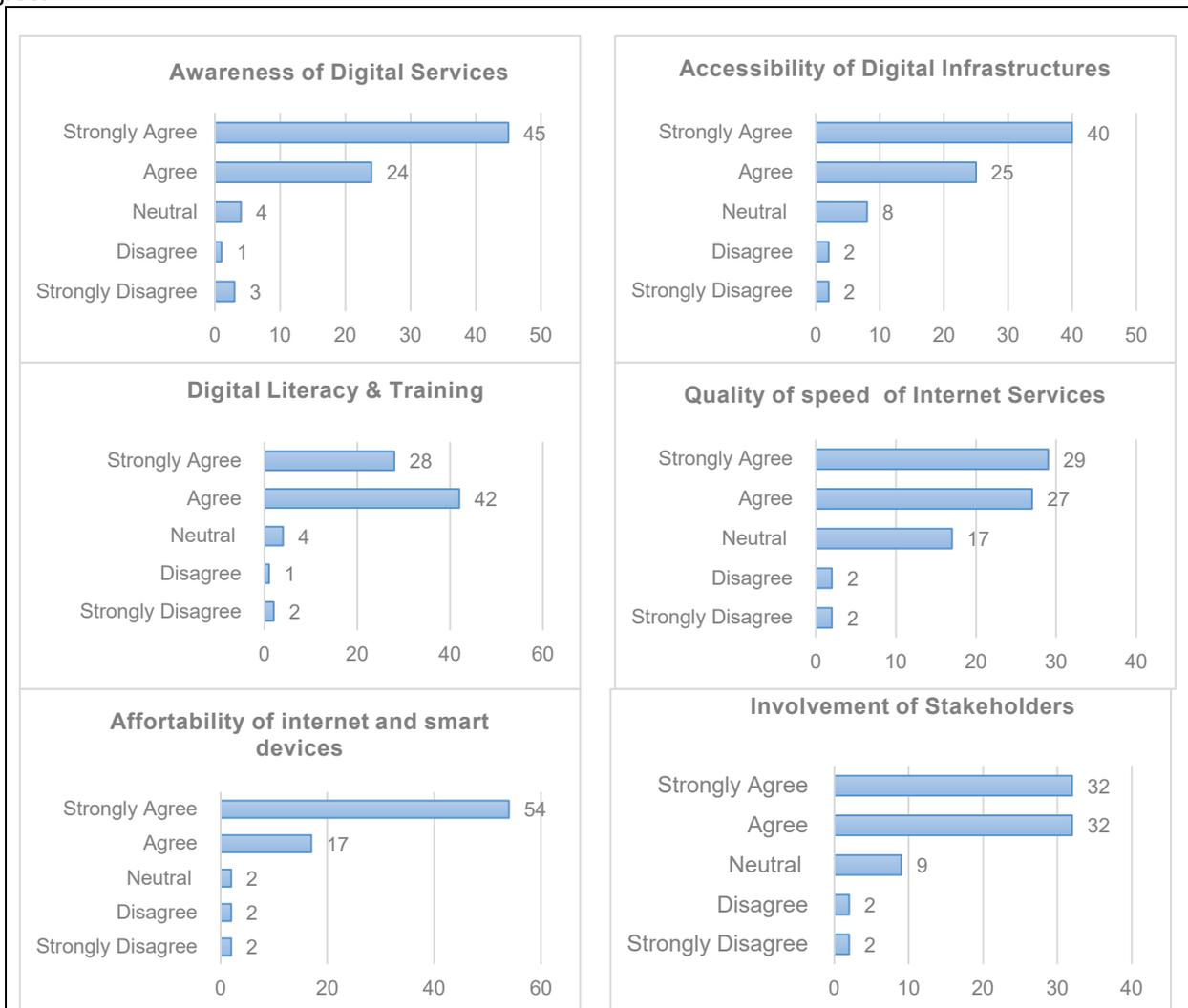


Figure 4. Elements for the Valued Added Rural Digital Services Model

A descriptive statistic was conducted based on the responses obtained from respondents on their opinion on what they considered when identifying the elements for the model for rural digital services for entrepreneurs. The results of these statistics are presented below.

**Table 2A. Elements for the Valued Added Rural Digital Services Model**

Descriptive statistics						
Variable	N	Mean	Median	Mode	SD	Variance
Awareness of Digital Services	77	4.39	5.00	5	.948	.899
Accessibility of Digital infrastructures	77	4.29	5.00	5	.944	.891
Digital Literacy /Training	77	4.21	4.00	4	.817	.667
Quality/ Speed of internet services	77	4.03	4.00	5	.973	.947
Affordability of internet and smart devices	77	4.55	5.00	5	.882	.778
Involvement of all stakeholders (Community, Government, Business)	77	4.17	4.00	4	.923	.853

Looking at Table 2A, we can see that we had a total number of 77 valid participants for each variable with zero missing cases. Mean scores and standard deviations for each element are summarized and it can be concluded that affordability of internet and smart devices and awareness of digital services have high significance for the model.

**Table 2B. Elements for the Valued Added Rural Digital Services Model**

N= 57			
Statement	Frequency	Percentage	Rank
Digital Infrastructure	57	100%	1
Digital Inclusion	54	95%	2
Digital Skills	53	93%	3
Digital Payments	46	81%	4
Cybersecurity	45	79%	5
Digital Services	44	77%	6
Digital Content	43	75%	7
Digital Actors	33	58%	8

The respondents N=57 were presented with eight parameters (variables) when it comes to key elements to be considered in developing the valued added model for digital services for rural entrepreneurs. All the Respondents 57 (100%) have selected Digital Infrastructure as the preferred element when it comes to developing a model for rural digital services for the entrepreneur.

### Proposed Conceptual Model

Based on Kivunja (2018) explanation, a conceptual model could be the product of your thinking about your research study. The model was developed encompassing data from literature review and empirical data obtained from 134 respondents as presented in the findings. Additionally, the barriers and interventions were obtained from the study conducted by Kamutuezu et al. (2021) which examined the factors influencing the adoption of ICT enabled applications and services for rural entrepreneurship activities in Namibia and recommended interventions to overcome barriers to ICT adoption by rural entrepreneurs. This paper proposes a linear Digital Infrastructure Inclusion Skills Services Actors (DISSA) Conceptual model for rural Entrepreneurs in Namibia. The model foundation is based on five elements as indicated in Fig. 5 below and also brings together all relevant concepts that facilitate digital entrepreneurship in the rural setting. All inputs in the framework are bi-directional and derive from the literature review and survey conducted. The literature review provides the rationale for rural entrepreneurship and unpacks other models developed and highlight how those models effectively promote rural digital entrepreneurship. The survey data confirm the necessity to develop the model and demonstrate what the model is likely to address to bring in positive impact and finally it proposes the key elements be considered for the development of the value-added digital services model for rural entrepreneurs.

**Digital Inclusion** - Inclusion is embedded into three pillars of affordability, capability and equality. Inclusion refers to the societal inequality aspects of access to ICT services and to which extent the people are accorded opportunities to participate in the information society (Magoro, 2015). This implies that the poor need to be aware of the new products and services that exist and how to use them and can afford such services. Affordability is central for a successful rural connectivity model as a community needs to have sufficient income to maintain and pay for their telecommunications services and internet access. Besides the ability and competency of using

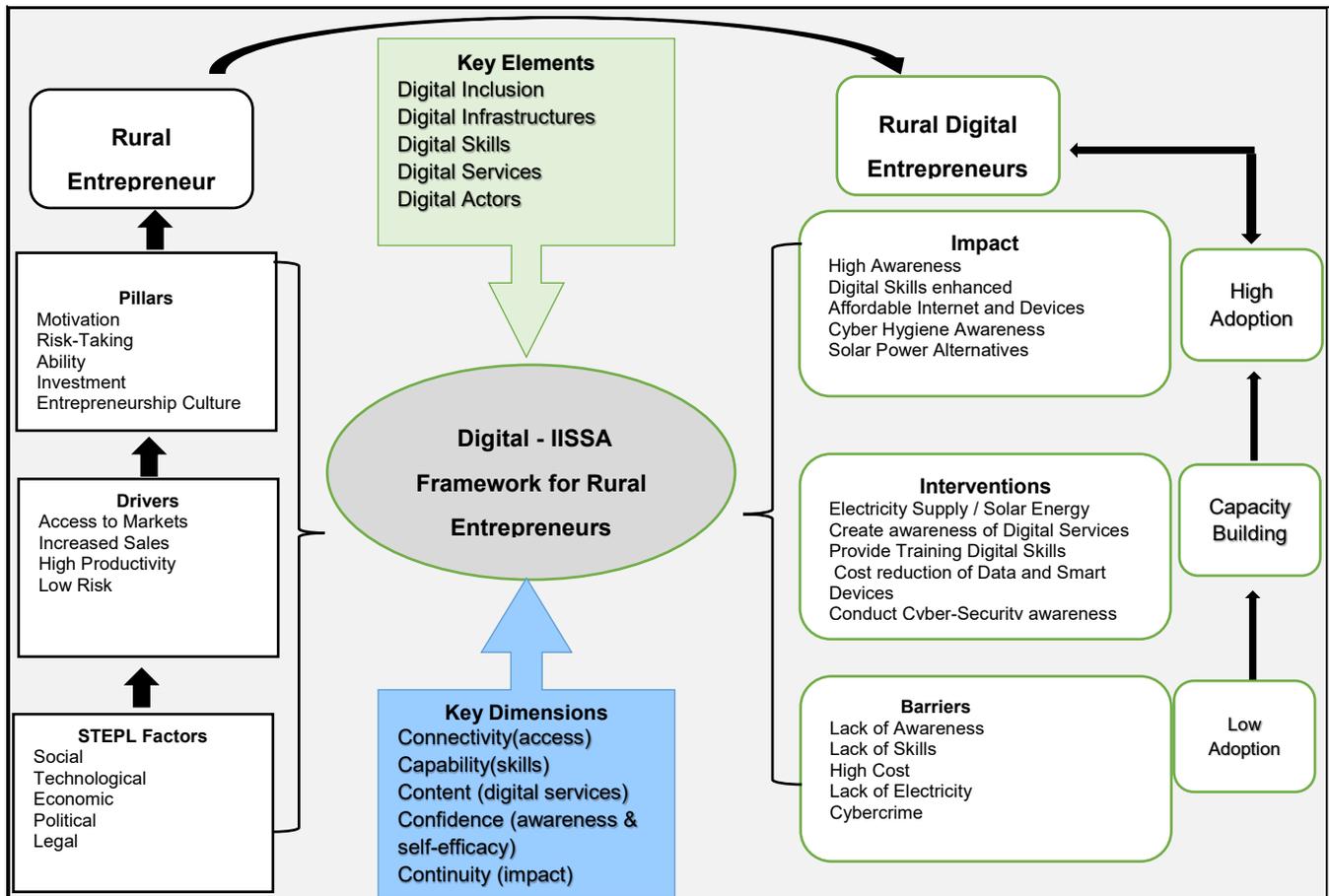
the internet, inclusion is about the people's positive attitude and behaviour to adopt the technology. Inclusion is people-centred and focuses on the demand side to address digital inequalities and digital inclusion (Salemink et al., 2015).

**Digital Skills-** This revolves around the skills, education level, knowledge, attitude and aspirations of rural people to use ICT applications. Digital Skills are extremely important for digital entrepreneurship to embrace the opportunities presented by new technology-enabled businesses and convert them to fruition, either as a new venture or by transforming existing business models (Welsum 2016).

**Digital Infrastructure** - It refers to the availability of quality high-speed internet. Moreover, the internet has made digital services easily available to everyone and this will stimulate start-ups and eliminate entry barriers to digital entrepreneurship. Connectivity is supply centred and focuses on what type of ICT infrastructures are available in rural areas that are preconditions for connectivity in this case the internet and electricity are identified (Salemink et al., 2015). The absence of mobile networks in rural areas especially in developing countries has hindered the socio-economic development of rural communities and equally denied rural entrepreneurs to use of a variety of digital services in business transactions and operations (Rey-Moreno & Pather,2020.)

**Digital Services** - Exploring opportunities for digital services such as digital hubs, public internet access points and the provision of e-services to promote e-government and e-commerce. Digital services include four approaches of Business- to -Business (B2B); Business-to-consumer (B2C); Consumer-to-consumer(C2C) and Government-to-Business (G2B) (CORA, 2018)

**Digital Actors** – The mixture of various Actors in the digital space brings a different dimension of expectations and motivations for the rural community. The actors have different roles, responsibilities and interests, these diversities require an incentive to attract/reward individuals and groups to participate in the digital ecosystem. This will enhance stakeholder commitment based on their motivations and potential interest to participate in the digital ecosystem and most importantly how to achieve a balance among conflicting positions or expectations from diverse groups with adverse interests while ensuring synergies of actions and outcomes. It reinforces the motivations for attracting and retaining actors in the digital ecosystem (Elia et al., 2020).



**Figure 5: Proposed DISSA Conceptual Model**

The strengths of this model are underlined by the fact that the elements and variables applied are derived from previously tested and verified models and frameworks in the last five years developed by Correa and Pavev,2016; European Network for Rural Development (ENRD),2016-2017; Connect Rural Areas (CORA),2018; Lekhanya,2018; Almuwil et al. 2019; Bisht et al. 2019); Elia et al. 2020; Savira and Fahm 2020; Abeysinghe & Malik (2021) and Kamutuezu et al. 2021.

The DISSA conceptual model consists of key interrelated concepts. The conceptual model conforms to Lindahl and Lindahl (2016) eight features of a good model or framework: "to generate a positive social impact; driven by both social and economic motivations; is novel; it can be promoted by different actors (businesses, NGO, public institution, etc.); is scalable; is sustainable; it can take

different forms; it can improve and change the lives of the poor". It is regarded that the digital drivers would motivate rural entrepreneurs in adopting digital technologies to develop and implement their entrepreneurial ideas. The model was evaluated using argumentation from literature reviews, preliminary interviews and academic publications. As stated by Kivunja (2018) that a researcher will develop a conceptual model underpinned by some of the theories, frameworks and models that have been reviewed during the literature review and ideally a conceptual model is substantiated by theoretical frameworks.

## Discussion

The core premise of this study was twofold. First, to ascertain the key elements of a Valued Added Digital Services model for Rural Entrepreneurs in Namibia and to suggest a conceptual model that facilitates the understanding and underscore the effectiveness of an ecosystem approach that is embedded in drivers and pillars of a thriving entrepreneur and proposes interventions to mitigate the barriers for effective adoption of digital services by rural entrepreneurs. This study culminated in a conceptual model that outlines the drivers of rural digital entrepreneurship, factors influencing the adoption, possible interventions and the desired outcome of thriving rural digital entrepreneurs. Digital entrepreneurs operate under the pillars of being motivated to take a risk, the ability to invest and undertaking entrepreneurship activities with persistent entrepreneurial culture to be successful and make a profit. If entrepreneurs thrive in possessing these pillars it can drive access to the market, reduce risk by doing more with less to maximise productivity and increase sales. However, there are Social, Technical, Economic, Political and Legal (STEPL) factors that influence the use and adoption of digital technologies and which present barriers including lack of awareness of digital services and lack of digital skills, affordability of internet and smart devices, lack of electricity supply to charge devices and cyber hygiene awareness. Subsequently, interventions that include raising awareness, digital skills training, cost reduction of the internet and smart devices, electricity supply and cyber hygiene will bring a positive change as value addition to promote the adoption and use of the digital services. Hence, for better adoption of digital services an ecosystem approach is perceived as the best alternative.

Digital entrepreneurship has brought in some relief from remoteness and enabled borderless conduct of business in certain sectors thus creating opportunities to work from remote areas at any time since the internet is available 24 hours every day. It can play an important role in eliminating gender inequality and social and economic exclusion. The combination of available open and public data can stimulate local development and contribute to sustainable development (Friederici et al., 2020).

The proposed five-element DISSA conceptual model is underpinned by the following:

- Extensive awareness of digital services boils down to making sure that everyone understands that such services are available and knows how to use them for entrepreneurship purposes.
- Enhancement of digital skills of socially excluded groups provides them with the means of more earnings to improve their lifestyle (Bisht et al., 2019).
- The supply of the internet to access digital services should be suitable for rural people's wallets. Broadband in rural areas should be available in economy packs without compromising on the quality (Bisht et al., 2019).
- A multi-stakeholder approach is suggested to fuse adverse actors' interests for a common approach on rural digital entrepreneurship initiatives and effective resource mobilisation.

## Conclusion

This study enhances the current dialogue about digital services entrepreneurship and hopes to promote digital entrepreneurship activities in rural areas. The conceptual model explains the interconnection between different elements and how different stakeholders can address the barriers for rural entrepreneurship by implementing various interventions. Moreover, this framework is a valuable tool for the decision-making process of an expedition to provide valued-added digital services for rural entrepreneurs. More broadly, the study responded to the questions about whether there is a need to develop a Valued-Added Digital Services Model for Rural Entrepreneurs in Namibia and proposes the key elements to be considered when developing such a model. However, due to limitations in the sampling of only four sites from four regions, the results cannot be widely generalized but can serve as a guide that describes the roadmap of the adoption of digital services by rural entrepreneurs. In this regard, a further study is proposed to include a bigger sample with a large population representation. The outcome of this study contributes to the theory and practice of rural digital entrepreneurship. In practice, this study is relevant, as it enlightens the nascent of rural entrepreneurs on how to adopt and use digital services to stimulate their business operations. There is no doubt of the validity of the proposed model as it derives from already tested verified and validated models and frameworks. The study can be expanded to cover other rural entrepreneurs as well as urban entrepreneurs who are residing in the informal settlement for holistic viewpoints and the presented conceptual framework should be assessed in real milieus from a practical perspective.

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