

6

0 0

Final Report

Ü

U

00

Ü

0 00

Ü

D

Ü

Digital Skills Ecosystem and Gap Assessment in Malawi

Project No.: P160533

Disclaimer

This "*Digital Skills Ecosystem and Gap Assessment Report in Malawi*" as part of consulting services, has been prepared by Ernst & Young LLP (hereinafter referred to as 'EY' or 'Ernst & Young' or 'Us') and delivered to the 'The Public Private Partnership Commission, Malawi (PPPC)' (hereinafter referred to as 'the Client').

The inferences and analyses made by EY in this report are based on information collated through primary research, secondary research, discussions with the client personnel and other key stakeholders as well as our knowledge about the program and its objectives. EY has taken due care to validate the authenticity and correctness of the information from various sources, however, no representations or warranty, expressed or implied, is given by EY or any of its respective partners, officers, employees or agents as to the accuracy or completeness of the information, data or opinions provided to EY by third parties or secondary sources.

Nothing contained herein, to the contrary and in no event shall EY be liable for any loss of profit or revenues and any direct, incidental or consequential damages incurred by the Client or any other user of this report.

In case the report is to be made available or disclosed to any third party, this disclaimer along with all the limiting factors must be issued to the concerned party. The fact that EY assumes no liability whatsoever, if for the reason any party is led to incur any loss for acting upon this report, must be brought to the notice of the concerned party.

© EY, 2021

"Ernst & Young Private Limited, (a company with registration no. U74120WB2008PTC121768) has converted into Ernst & Young LLP (a Limited Liability Partnership with LLP Identity No. AAB-4343) effective 1st April 2013. As per Section 58(4) of the Limited Liability Partnership Act 2008 (LLP Act) and The Third Schedule of the LLP Act, all tangible (movable or immovable) and intangible property vested in the company, all assets, interests, rights, privileges, liabilities, obligations relating to the company and the whole of the undertaking of the company shall be transferred to and shall vest in the limited liability partnership without further assurance, act or deed. Hence, the financials/ C.A. Certificates / Credentials, etc. of erstwhile Ernst & Young Private Limited are provided as credentials of Ernst & Young LLP."

**Ernst & Young Private Limited, (a company with registration no. U74120WB2008PTC121768) converted into Ernst & Young LLP (a Limited Liability Partnership with LLP Identity No. AAB-4343) effective 1st April 2013



Acknowledgement

EY is sincerely thankful to The Public Private Partnership Commission, Malawi (PPPC) for selecting the services of our firm to conduct the "Digital Skills Ecosystem and Gap Assessment in Malawi".

EY team expresses deepest gratitude and appreciation to all those who provided support, without which the study would not have been accomplished. We convey our gratitude to all those who have, in some way or other, contributed towards the successful completion of the project.

We are especially thankful to the PPPC, for anchoring this study and guiding us through every stage of the study with administrative and operational support. Appreciate all the insights and support from all the Key Stakeholders.

This study was possible through the cooperation of all our respondents from all over the country. We are grateful to all the ministries and government departments, Malawian citizens, Principals and staff of all primary, secondary and tertiary educational institutions in Malawi, all representatives from industries and entrepreneurs, international and local development organizations, and the community members who participated in our study through the data collection process.

This study helped to throw light on the level of digital competencies of the Malawian population and preparedness of digital ecosystem of Malawi for digital empowerment. We hope that the study results help in better policy making to make the ecosystem more conducive to digital skilling by addressing the social, economic and institutional challenges identified through the study.

Foreword

(To be included by PPPC)

.

Revision History

Version	rsion Issue Date Description	
1.0	7 October 2021	Submission of Final Report (Version 1)

Abbreviations and Acronyms

AfDB	African Development Bank
AI	Artificial Intelligence
AIP	Affordable Input Programme
вро	Business Process Outsourcing
СВЕТ	Competency-Based Education and Training
CSDC	Community Skills Development Centres
стс	Community Technical Colleges
DE4A	Digital Economy for Africa
EU	European Union
GDP	Gross Domestic Product
ISCED	International Standard Classification of Education
ICILS	International Computer and Information Literacy Study
ІСТ	Information and Communications Technology
IT/ITES	Information Technology/ Information Technology Enabled Services
ITIL	Information Technology Infrastructure Library
J4Y	Job for Youth project
КРО	Key Process Outsourcing
LDC	Least Developed Country
LFPR	Labour Force Participation Rate
MACRA	Malawi Communications Regulatory Authority
MDBNL	Malawi Digital Broadcast Network Limited
MDA	Ministries, Departments and Agencies

-

<u> </u>	
MDG	Millennium Development Goals
MGDSII	Malawi Growth and Development Strategy II
MW 2063	Malawi 2063 - Vision Document
NAP	National Agriculture Policies
NEET	Not in Education, Employment or Training
NGO	Non-Government Organizations
NRB	National Registration Bureau
NTC	National Technical Colleges
OECD	Organization for Economic Co-operation and Development
PSU	Public Sector Undertakings/Enterprises
PWD	Persons with Disabilities
R&D	Research and Development
SADC	Southern African Development Community
SDG	Sustainable Development Goals
SME	Small and Medium Enterprises
ТИМ	Telecom Networks Malawi
ΤΕΥΕΤΑ	Technical, Entrepreneurial and Vocational Education and Training Authority
UNIDO	United Nations Industrial Development Organization

_

CONTENT

		Disclaimer	1
		Acknowledgement	2
		Foreword	3
		Executive summary	12
1.		The Global Digital Wave	20
2.		Malawi - A brief Country Snapshot	31
3.		Digital Malawi Program	38
4.		Digital Skill Assessment of Malawian Population	49
	4.	.1Profile of Respondents covered for the study	49
	4.	.20verview of Skill Competency Level - Foundational Skills	51
	4.	.30verview of Skill Competency Level - Intermediary Digital Skills	53
	4.	.40verview of Skill Competency Level - Advanced Digital Skills	64
5		Digital Skills and Learning in Malawi	67
	5.	.1Snapshot of Malawi's education and TVET ecosystem	67
	5.	.2Profile of Institute covered for the study	69
	5.	.3Key results - Assessment of digital learning in educational institutes in Malawi	70
	5.	.4Key results - Assessment of TVET ecosystem for digital skills in Malawi	78
	5.	.5Fostering digital skills in competency in Malawi	82
6		Demand of Digital Skills in Malawi	90
7		Conclusion - Gap Assessment	109
Re	efe	erences	125
A	าท	nexure	129
	A	. Approach and Methodology	129
	Β.	. Sampling for Digital Skills Competency Assessment	138
	C.	. Sampling for Demand side Assessment	139
	D.	. Sampling for Supply Side Assessment	140
	E.	Sampling for Key Informants	141

List of Tables

Table 1: Frameworks for assessment of digital skills	23
Table 2: Strategic pillars, priority areas, key initiatives and outcomes under the National I	СТ
plan 2014-2031 for Malawi	40
Table 3: Overview of Digital Malawi Program	42
Table 4: Benefits of Malawi Digital foundations projects across various stakeholders	44
Table 5: Assessment Framework for Schools and Institutes	70
Table 6: Competency themes for shcools	75
Table 7: Competency themes for tertiary Institutes	76
Table 8 : Summary of key challenges and recommendations	82
Table 9: Sampling for Survey of Industries	90
Table 10: Sampling for Survey of Ministries and Departments	90
Table 11: One of the Questions asked to Ministries during the Stakeholder Consultations .	93
Table 12: Primary Research through Stakeholder Consultations	.100
Table 13: Primary Research from Data Survey	.102
Table 14: A Question to Industry Respondents in the Data Survey	.103
Table 15: On field data collected	133

.

List of Figures

Figure 1: Percentage of individuals using the Internet by development status (2019)	20
Figure 2: Population coverage by type of mobile network (4G), 2020	21
Figure 3: Mobile-broadband network coverage	21
Figure 4: Internet gender gap	21
Figure 5: Gender-wise Age Distribution in Malawi	31
Figure 6: Gender-wise Sectoral Contribution to Total Employment (in %),	32
Figure 7: Unemployment rate (in %) by gender and location	33
Figure 8: Population (in million) by employment status, sex and location	33
Figure 9: Unemployment rate (in %) location and sex	34
Figure 10: Region-wise Literacy Rate in Malawi (%)	34
Figure 11: Gender-wise Population which Never Attended School (%)	35
Figure 12: Region-wise means of Communication in Households	38
Figure 13: Objectives of the assignment	46
Figure 14: Respondent Profile for Digital Skill Assessment	49
Figure 15: Respondent Profile by Marital Status	49
Figure 16: Respondent Profile by Location	50
Figure 17: Educational Profile of Respondents	50
Figure 18: Digital Exposure of Respondents	50
Figure 19: Foundational Digital Skills in Malawi	51
Figure 20: Foundational Digital Skills across Rural-Urban	52
Figure 21: Gender-wise Foundational Digital Skills	53
Figure 22: Information and Data Literacy Skills	54
Figure 23: Gender-wise Information and Data Literacy Skills	55
Figure 24: Information and Data Literacy Skills across Rural/Urban	55
Figure 25: Communication and collaboration competency	56
Figure 26: Communication and collaboration competency across Rural/Urban	57
Figure 27: Digital content creation Skills	57
Figure 28: Gender-wise Digital content creation	58
Figure 29: Awareness of Digital Rights in Malawi	59
Figure 30: Gender-wise Awareness of Digital Rights in Malawi	60
Figure 31: Transacting Skills in Malawi	61
Figure 32: Transacting Skills in Malawi across Rural/Urban	61
Figure 33: Digital problem-solving Skills in Malawi	62
Figure 34: Workplace career related Skills in Malawi	63
Figure 35: Advanced Digital Skills in Malawi	64
Figure 36: Age-wise Advanced Digital Skills in Malawi	65
Figure 37: Advanced Digital Skills in Malawi as per Educational Background	66
Figure 38: Formal Education System in Malawi	67
Figure 39: Distribution of 417 samples schools covered during the study	69
Figure 40: Distribution of 51 tertiary institutes covered during the study	69

.

Figure 41: Distribution of 25 TVET institutes covered during the study
Figure 42: Schools with computer and internet connection70
Figure 43 Percentage of schools across categories with computer and internet facilities71
Figure 44: Schools with computer and internet facilities71
Figure 45 Tertiary institutes with computer and internet connection72
Figure 46: Percentage of youth enrolled across vocational, certificate and diploma courses 73
Figure 47: Out of the 223 schools that have introduced computer courses, only 30% have
computers at school74
Figure 48: Responses from 58 schools on teacher capacity building for ICT led teaching75
Figure 49: Responses from 47 tertiary institutes on teacher capacity building for ICT led
teaching76
Figure 50 Key challenges faced by schools and colleges for introduction of ICT learning77
Figure 51 Percentage of youth enrolled across vocational, certificate and diploma courses .79
Figure 52 Challenges faced by TVET institutes while mobilisation of candidates for digital
training course
Figure 53 Minimum education qualification of trainers across for basic, intermediate and
advanced digital courses in Malawi81
Figure 54: Respondent Organizations by Size91
Figure 55: Sectoral Break-up of Industry Respondents92
Figure 56: Distribution of Respondents across Industries92
Figure 57: Core Business Activities of Malawians as per Census report, 201893
Figure 58: Level of ICT Usage in Malawi94
Figure 59: Level of ICT Usage across regions95
Figure 60: Level of ICT Usage by Sectors96
Figure 61: Perceived Impact of Global megatrends in Malawi97
Figure 62: The Global Megatrends trying to find balance in Malawi98
Figure 63: Ministries list the use Activities which use ICT99
Figure 64: Share of Revenues from Digital Business and the Allocation of Revenues to Digital
Initiatives
Figure 65: Quality and Availability of Digital Workforce105
Figure 66: Initiatives taken by respondents to address the lack of Quality and Availability of
Digital Workforce
Figure 67: The frequency of reskilling activities by Companies106
Figure 68: Level of Trainings provided by Ministries and Employee Feedback107
Figure 69: Low Technology driven Industries in Malawi, UNIDO 2021116
Figure 70: Manufacturing Sector in Malawi, UNIDO 2021116
Figure 71: Need for developing LMIS, Ministry of Labour, Malawi118
Figure 72: Elements of Digital Skills and Ecosystem Assessment129
Figure 73: Research Tools developed132



Executive Summary

Executive summary

Digital technologies, are rapidly changing the way the world communicates, operates and grows, and the benefits from these digital technologies are termed as digital dividends, that are differentially reaped by various countries across the world.

Malawi is classified in the Least Developed Country (LDC) category and is currently at a nascent stage of its digital transformation journey, whereby its faced with challenges pertaining to inadequate ICT infrastructure, high investment cost for ICT infrastructure, inequitable access to internet services across social and economic groups, lack of awareness of ICT and e-services, lack of digital skills and competencies among the workforce, unrealised potential of ICT led innovation among others.

While some nations have been able to address the above impediments and build their nation's infrastructure and its people's competencies to leverage the dividends of digital services and technologies. However, Malawi due to its prevailing socioeconomic conditions is at a disadvantage and has not been able to harness the benefits of the digital wave around the world.

Digital technology, particularly mobile phones and mobile broadband can be a powerful enabler and equalizer. It has the potential to dramatically reduce Malawi's inherent disadvantages as a remote, landlocked country and the disadvantages of citizens in rural areas. For the fundamental digital divide to be minimized, the issues of access and affordability need to be addressed through a focus on education, infrastructure and livelihood interventions. Design of a sound digital transformation goes beyond just the availability of digital goods and services in the economy, but spans across infrastructure, enabling systems, a comprehensive regulatory environment, awareness and advocacy around digital skills etc.

Such a comprehensive digital transformation will be pronounced successful only when it also aims to train and hon the skills of the population to fill the positions to support digital project implementation cycles across the public and private sector. Digital transformation also requires that existing manpower even in non-IT sectors have the appropriate skills and knowledge to work in a digitalized environment. The larger population as well, if not equipped with basic digital skills stand a risk of exclusion from the digital revolution.

The Study

The Government of Malawi, being in cognisance of the digital dividends that the country is capable of reaping has rolled out various policy initiates to transform the digital ecosystem of the country. One of the flagship digital transformation programs in Malawi is the Digital Malawi Project, which is supported by World Bank and implemented by Public Private Partnership Commission in Malawi. The program seeks to leverage digital technology to drive economic growth, innovation and job creation, access to services, information and markets, and to increase government efficiency and transparency, and aims to benefit all citizens of Malawi, both at micro and macro levels.

Countrywide digital transformation requires a pre-assessment of the population, labour market, public sector and education systems to understand their readiness to adapt to the technology influx. The need for digital skills goes beyond IT as a career for young people. Malawi needs a population that can use digital tools efficiently and update their skills to deal with the wide-ranging transformations brought about by digitalization

Objectives of the study

Thus, 'Digital Skills Ecosystem and Gap Assessment and Strategy Formulation in Malawi' aims to- address information gap, highlight shortages of digital skills, assess the adequacy of supply vis a vis the potential need for digitally skilled manpower, assess the current ICT infrastructure in the education and training sector and help frame strategies to address unemployment through integrated digital solutions.

The study spreads over two key components - the digital skills ecosystem assessment and the digital skills strategy formulation in Malawi.

The key objectives under the study **for the Digital Skills Ecosystem and Gap Assessment** are as follows:

- Evaluate the skills level of the economy across social groups ages, social and income classes, gender, regions as well as disabilities
- Technical and operational assessment of the digital ecosystem in the region including public and private sector actors, academia
- Demand assessment of the jobs /economic opportunities available, locally, regionally, and globally

- Review the supply-side ecosystem (both manpower and infrastructure) to assess the availability of manpower in Malawi for the current digital jobs opportunities and those to be created
- A skills gap analysis to identify available skills and gaps within current and future industry demands

Further, a companion report, *Digital Skills Strategy Formulation*, aims to provide the framework strategy for addressing the gaps identified and provide a framework of actions to help Malawi leapfrog in the digital transformation journey

Study design

The research design made use of mixed methods, both qualitative and quantitative research methods. Use of qualitative tools helped in understanding the perspectives of different stakeholders, across educational and training institutes, industry members, government stakeholders and other key participants such as NGO, recruitment agencies, entrepreneurs etc. Quantitative analysis helped to assess the digital competency levels of the population across foundational, intermediate an advanced skill and helped to triangulate the findings from qualitative research. The study spanned across the country and collection responses from over 3000 respondents, to cover the various aspects of the digital skills assessment.

- > For Digital skills assessment, targeted sample respondents included Malawian population
 - Age groups 6 years above
 - Gender groups Male/Female
 - Region Urban/Rural
- For digital employment demand assessment, both private and public sector organizations have been represented in primary survey. self-employed and entrepreneurs has been included to understand their journey
- Supply side assessment included primary and secondary schools, college, universities, polytechnics, TEVET, technical hubs, etc.
- To further enhance the study outcomes, NGOs and other developmental organizations working in field of - digital literacy, skilling, women empowerment, PWDs, and other vulnerable groups, were also covered.

Key Findings

Digital Skill Assessment of Malawian Population

The survey across 2,793 Malawian citizens was conducted to identify the digital skills and competency levels of the Malawi.

- On an average, only 44% of Malawi's population possesses the foundational skills required to leverage digital technology and digital dividend.
- It was found that 60% of the population lacks the competency to operate a computer and access the internet on their mobile device.
- A broad range of intermediate digital skills and competencies are required to make use of digital technologies in a meaningful and beneficial way. These skills highlight the foundational importance of 'technical fluency' required to use digital devices and software as well as to access information.
 - The survey results indicate that more than 40% of the Malawian population can be classified as having no competency on any dimension of the information and data literacy skills.
 - 65% of the citizens have shown limitation in their ability to retrieve information online.
 - Only 40% of the citizens were seen to be able to use internet services to collaborate and communicate through internet-based calls, emails, share information online.
 - Less than 40% of the citizens expressed that they could access and fill up online forms and applications to avail services etc
 - More than half of the population covered didn't know how to perform digital transactions
 - Less than 30% of the citizens covered reported to have awareness about digital rights and knowledge about online safety precautions
- As far as advanced skills are concerned, only 25% the respondents had either of following skills - ICT specialist skills, programming skills, skills on big data, machine learning, artificial intelligence to program or develop applications and manage networks.

In addition, clear dichotomy was also noticed across income groups, gender groups and geographical locations. A significant divide in the attainment of digital skills competency was observed between the population in rural and urban areas and also across gender groups, where females were observed to be fairing lower than national averages across the skill levels.

Assessment of digital learning in educational institutes in Malawi

To understand the gaps in the programs across the education and the skills sector with respect to digital learning, the study conducted a survey across the country covering 417 schools, 51 tertiary institutes and 25 vocational training institutes primarily assessing them on three key themes - Infrastructure, Policy and Planning and Pedagogy and Practice

- 23% of schools and 84% of the tertiary institutes had access to computers. While 17% schools had access to internet, 76% of the tertiary institutes had internet facilities
- Only 53% of the schools have formally introduced computer training to its students and only 70% of these schools have access to computers. 50% of the tertiary institutes covered offered courses with digital learning elements and almost 40% of these lacked access to internet and/or laptop
- While only 13% of the school staff was capacitated for undertaking ICT-led teaching and had competencies to deliver lessons using digital platforms and computer applications, more than 90% tertiary institutes had capacitated their staff for delivering digital courses
- Lack of adequate number of teachers/staff/instructors for ICT courses at education level, was one of the key challenges faced while fostering digital skills at primary and tertiary levels
- Further, it was observed that there is little digital education content based on the local curriculum frameworks available in Malawi's education institutions.
- With respect to skills and vocational training, since the country is at a very initial stage in its technological development, the population at large had limited information about what digital jobs are and how can digital skills be beneficial to the youth. Owing to this very low uptake and aspiration for digital learning courses was noticed across the TVET institutes
- Additionally, it was also noted that there are limited TVET and tertiary institutes that offer advanced and intermediate digital course. Consequently, most of the instructors for digital courses were found to be holding only Malawi School Certificate of Education.
- While vocational training courses should be aligned with the industry demand for skills, only 20% of the TVET and tertiary institutes offering digital skilling courses had active collaborations with industry or were associated innovation and technology hubs.

Demand of Digital Skills in Malawi

A data collection survey was performed across Malawi to perform an assessment of the ecosystem and demand of digital skills. A total of 712 industries and entrepreneurs were interviewed along with the representatives from 22 ministries.

- Malawi being an agriculture-based economy, there is an inherent challenge of introducing ICT solutions across the economy, given the lower presence of service sector industries
- The companies participating in the survey reported a relatively low level of usage of digital / ICT tools in organizations across Malawi. Only 18% organizations reported a high usage of ICT tools.
- Enterprises in Malawi are struggling to leverage the potential of emerging technologies. The survey data revealed that close to 60% of the organizations make less than 20% of their revenue from the digital businesses in their portfolio.
 - High ICT integration was only found in service sector occupations such as business management, consulting, management, banking and financial services, telecommunication etc
 - Only 23% of the enterprises felt that business innovation will have a high impact on businesses in Malawi by 2025
 - Almost 40% of the industry respondents felt that global opportunities will have a low impact in providing employment for Malawian youth
 - \circ Only 20% of the enterprises employ the services of independent / online freelancers
 - Only 8% of the organizations make more than 40% revenues with their digital initiatives
- While enterprises are increasingly allocating higher share of revenues to digital initiatives but unable to reap the maximum benefits. One key reason behind this is lack of cybersecurity and perceived threats from cyber-crimes like phishing.
- The top job roles that will find demand in digital Malawi include: App and Cyber security Specialists, Web and App (Software) Developer, IT/ICT Managers, Accountant (Proficiency in digital tools), Digital Marketer
- Cognitive abilities, complex problem solving, and social skills were among some of the other top skills to find increasing demand in future. It was observed that the percentage of companies which believed that half of the jobs would require digital skills increases from 39% in 2020 to 63% in 2025.

In conclusion, the skill gap assessment results make clear that Malawi's ICT ecosystem is relatively underdeveloped and that low digital literacy, inadequate infrastructure and weak ICT institutional capacity pose challenges to take advantage of the potential digital dividend. However, the digital ecosystem also has significant potential for job creation, particularly for youth. With 'Digital Economy Strategy' implementation, new work formats will offer individuals and entrepreneurs new digital job opportunities across all sectors. During the survey, majority of government departments, development/funding agencies, and implementing partners agreed that an *e-Government program and initiatives* needs to be carried out. Malawi faces an acute shortage of digitally skilled labour force which slows the implementation of its digital initiatives. Government initiatives combined with organizations working for development of Malawi must prioritize digital skilling and a detailed strategy for skilling and education must be developed for digital empowerment of the masses.





The Global Digital Wave

1. The Global Digital Wave

"Digital technologies-the internet, mobile phones, and all the other tools to collect, store, analyze, and share information digitally-have spread quickly. More households in developing countries own a mobile phone than have access to electricity or clean water. The number of internet users has more than tripled in a decade-from 1 billion in 2005 to an estimated 3.2 billion at the end of 2015. This means that businesses, people, and governments are more connected than ever before." (World Bank, $2016)^1$

The fourth industrial revolution has fundamentally reshaped the way communities live,



communicate, produce, work and trade. While the earlier discourse of automation and digitization was coupled with substantial consternation around job displacement and employment disruption thereof, countries have moved beyond this narrative to realize, and are increasingly taking cognizance of the potentials of a knowledgebased economy by placing ICT and digital skills at the centre of their

developmental paradigm, through massive investments in digital technologies. The world economy is transforming at a rapid pace with the increasing adoption of emerging technologies such as AI, blockchain, and big data, comprehensively often referred to as enablers of a digital economy.

Digital technologies are changing the patterns of production and consumption as well as restructuring the marketplace. As of 2019, the global penetration of the internet stands at 53.6% of the global population with more than 4.1 billion people estimated to be using the internet across the globe. The number of internet users growing at a rate of 10% each year since 2005.

The data transmission has also grown exponentially from 100 GB per day in 1992 to 46600 GB data per second in 2017. It is expected to grow further to 150,700 GB per second by 2022. Further, E-commerce, which encompasses digital technology services enabled transaction of



Figure 1: Percentage of individuals using the Internet by development status (2019)

World Bank. (2016). World Development Report -Digital Dividends. Washington: World Bank Group. Accessed from World Bank Document

http://documents1.worldbank.org/curated/en/896971468194972881/pdf/102725-PUB-Replacement-PUBLIC.pdf

goods and services including online marketplaces, had a global value of USD29 trillion accounting for one-third of the world's overall GDP. This involved almost 1.3 billion people leveraging online services for making online transactions to obtain goods and services ².

Varying digital dividends across economies and geographies

The benefits from the digital technologies are often termed as digital dividends and the extent to which the economies can harness this dividend is largely governed by economic structures, social preferences³ and their position in the development continuum. Stakeholders have varied ability to lead and adopt digital



Figure 2: Population coverage by type of mobile network (4G), 2020

transformation, and this results in a deep gap between the under-connected and the hyperconnected countries.

For instance, in developed countries, close to 87 per cent of individuals have access to and are





	Female	Male
Developed countries	86%	88%
Least developed countries	15%	28%



Figure 3: Mobile-broadband network coverage

using the internet. In the least developed countries (LDCs), on the other hand, only 19 per cent of individuals were using the internet in 2019.⁴ One can also see in Figure 2 that in terms of coverage of the mobile network, there seems to be a vast difference

Figure 4: Internet gender gap

in the quality of mobile internet services or bandwidth available in various regions of the world Only 43.4% of the population in the least developing countries have access to 4G network, which is almost 41 percentage points behind the global figure of 84 per cent.⁵

² International Telecommunication Union. (2019). *Measuring digital development Facts and figures 2019*. Accessed from <u>https://www.itu.int/en/ITU-D/Statistics/Documents/facts/Facts/Figures2019_r1.pdf</u>

³ Mühleisen, M. (2018). The Long and Short of The Digital Revolution. *Finance & Development*, 55(2), 4-8. Accessed from <u>https://www.imf.org/external/pubs/ft/fandd/2018/06/impact-of-digital-technology-on-economic-growth/muhleisen.htm</u> ⁴ International Telecommunication Union. (2019). *Measuring digital development Facts and figures 2019. Accessed from* <u>https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2019_r1.pdf</u>

⁵International Telecommunication Union. (2020). *Measuring digital development Facts and figures 2020. Accessed from* FactsFigures2020.pdf (itu.int)

This variation of access also persists across social groups within an economy. In 2019, it is estimated that globally 55 per cent of the male population was using the Internet, compared with 48 per cent of the female population. Referring to figure 4, one may note that this differential can be seen increasing from developed to least developing nations⁶.

Digital transformation programs to leverage digital dividends

The need to harness the digital potential and to address the challenge of differential digital dividends has motivated countries to design, plan and implement countrywide digital transformational programs aimed to enhance the 5 key foundational pillars of a digital economy with pervasive elements of accessibility, affordability and usability :

- > Digital Infrastructure: making broadband available and accessible at affordable prices
- Digital Platforms (Public/Private): providing and enabling access to services, information and products
- Digital Financial Services: financial transactions and payments to be made electronically and promote financial inclusion
- Digital Skills and Learning: making people able to identify and learn digital skills to design and use digital platforms
- Digital Innovation and Entrepreneurship: stimulating innovation, promoting start-ups related to digital technology and products

The direct correlation between technology and development has been widely accepted and the same was resounded even almost a decade ago by the United Nations Millennium Development Goals (MDGs), World Summit on the Information Society (WSIS) (Geneva in 2003 and Tunisia in 2005)⁷ and UN General Secretary Assembly resolution in 2002, that highlighted the impact of use and access of technology within countries on their developmental processes. More recently, the Internet has been directly mentioned in the Sustainable Development Goals (SDGs), in particular SDG 9c, which states, 'to significantly increase access to ICTs and provide universal and affordable access to the Internet in the least developed countries by 2020⁸

For the fundamental digital divide to be minimized, the issues of access and affordability need to be addressed through a focus on education, infrastructure and livelihood interventions. Design of a sound digital transformation goes beyond just the availability of digital goods and services in the economy, but spans across infrastructure, enabling systems, a comprehensive regulatory environment, awareness and advocacy around digital skills etc.

⁶ Same as above

⁷ ITU. (2003). World Summit on the information society - Plan of action. Accessed from <u>WSIS: Plan of Action (itu.int)</u> ⁸ United Nations. Sustainable Development Goal 9 - Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation. Accessed from <u>Goal 9 | Department of Economic and Social Affairs (un.org)</u>

Digital Skills as a key tool for digital transformation

"Digital skills are defined as a range of abilities to use digital devices, communication applications, and networks to access and manage information. They enable people to create and share digital content, communicate and collaborate, and solve problems for effective and creative self-fulfilment in life, learning, work, and social activities at large⁹." United Nations Educational, Scientific and Cultural Organisation (UNESCO)

Infrastructural development led digital transformation programs can only thrive when combined with programs for digital skills and literacy. Digital skills constitute technology skills, together with business skills for building or running a start-up or enterprise. Greater digital literacy further enhances the adoption and use of digital products and services among the larger population.¹⁰. Population and especially youth across geographies and social groups when empowered with knowledge and skills about the technology-led ecosystem, will be able to leverage the digital dividends and maximize the return on infrastructural investment.

World Bank's DE4A tools and guidelines also highlight that digital transformation requires that governments plan for training and honing the skills of the population to fill the positions of developers, programmers, IT project managers, database managers, data scientists, cloud computing and cybersecurity experts etc.) to support project implementation cycles across the public and private sector. Digital transformation also requires that existing manpower even in non-IT sectors have the appropriate skills and knowledge to work in a digitalized environment. The larger population as well, if not equipped with basic digital skills stand a risk of exclusion from the digital revolution.

The significance of digital skills and competencies in a digitally evolving economy has been a topic of discussion across discourses and over the years different frameworks have emerged in this regard. Some of the key frameworks may be seen below:

S. No	Framework Reference	Digital Skills Assessment Framework
1.	OECD (2004)	The definition used by the OECD focuses on three
		categories of ICT competencies linked to three different
		types of users:
		ICT specialists: competencies under this user group
		cover the ability to develop, operate and maintain ICT

Table 1: Frameworks for assessment of digital skills

⁹ Digital skills critical for jobs and social inclusion, UNESCO: <u>https://en.unesco.org/news/digital-skills-critical-jobs-and-social-inclusion</u>

¹⁰ World Bank. (2020). *Digital Economy for Africa Country Diagnostic Tool and Guidelines for Task Teams*. The World Bank Group. Accessed from <u>1 - DE4A Diagnostic Tool (worldbank.org)</u>

S No	Framework Reference	Digital Skills Assessment Framework
		systems. ICTs constitute the main part of their iob for
		this user group;
		Advanced users: this group of users are described as
		'competent users of advanced, and often sector-
		specific, software tools. ICTs are used as a tool for
		these users in a workplace context; and
		Basic users: this group of users are described as
		'competent users of generic tools (e.g. office suites
		and internet-related tools such as the browser and
		email clients) needed for the information society, e-
		government and working life. ICTs for this user group
		is mainly used as a communicating tool.
2.	European Parliament	The European Parliament defines digital competence as
	(2006)	"the confident and critical use of information society
		technology for work, leisure, learning and
		communication. It is underpinned by basic skills in ICT,
		i.e. the use of computers to retrieve, access, store,
		produce, present and exchange information, and to
		communicate and participate in collaborative networks
		via the internet".
3.	WDM Consultants	The Canadian study "Defining Essential Digital Skills in
	(2011)	the Canadian Workplace" defines digital skills as a
		multifaceted concept, which encapsulates four skill
		clusters: (1) Digital Technical Skills; (2) Digital
		Information Processing Skills; (3) Foundational Skills;
4		and (4) Fransversal Skills
4.	Development	In Development Economics The Future Digital Skills
	Economics (2013)	defined (as the attributes that allow individuals and
		businesses both to use digital equipment and to access
		create or share digital information via the internet and
		thereby henefit from opportunities in the modern
		economy. The report sets out what it calls 'a functional
		hierarchy of these digital skills' as:

S. No	Framework Reference	Digital Skills Assessment Framework
		Advanced digital skills: skills linked to 'the creation
		 Advanced digital skills: skills linked to 'the creation and/or strategic exploitation of new digital applications, including more advanced programming and coding involved in the creation of new software, etc., but they also cover the strategic business skills needed to convert ideas into successful commercial projects and ventures'; Intermediate-level digital skills: these involve 'skills needed to implement and manage on a day-to-day basis the applications developed by those with advanced skills, but they may also provide contributions to the development of digital content, provision of system support and maintenance, etc.'; Entry-level digital skills: skills related to 'the use of digital applications designed, developed and promoted by others: involving, for example, searches for and/or the capturing and recording of digital data across a wide variety of business and public services, the administration of databases, the monitoring of data, contributing to the management of digital content, etc.'.
5.	OECD (2013), PIAAC Survey	OECD in its adult learning survey includes 'problem solving in technology-rich environments' as one of the necessary skills needed in a broad range of contexts, from education through work to everyday life. This is defined as 'the ability to use technology to solve problems and accomplish complex tasks. These are skills that are 'essential for people to be able to decide what information they need, to evaluate it critically, and to use it to solve problems.
6.	DIGCOMP's Framework for Developing and Understanding Digital Competence in Europe (2013)	DIGCOMP's digital framework is based on five dimensions (information, communication, content creation, safety and problem solving) which are sub-dived into a set of competences. These competencies are linked to three proficiency levels; foundation, intermediary and

-

S. No	Framework Reference	Digital Skills Assessment Framework
		advanced level. The framework sets out a range of skills and knowledge needed for each of these proficiency levels.
7.	European e Competence Framework (e-CF) (European Commission 2014)	 This framework has been mapped against the European Qualifications Framework. The European e-Competence Framework (ibid) is structured from four dimensions: Dimension 1: 5 e-Competence areas, derived from the ICT business processes Plan, Build, Run, Enable and Manage; Dimension 2: A set of reference e-Competences for each area, with a generic description for each competence. Forty competences identified in total provide the European generic reference definitions of the e-CF 3.0.; Dimension 3: Proficiency levels of each e-Competence provide European reference level specifications on e-Competence levels e-1 to e-5 that are related to the EQF levels 3 to 8; and Dimension 4: Samples of knowledge and skills relate to e-Competences in Dimension 2. They are provided to add value and context and are not intended to be exhaustive".
8.	DIGITAL SKILLS for the UK ECONOMY - Department of Business Innovation & Skills and Department of Culture Media and Sports of the United Kingdom (2016)	 Three broad categories of digital skills identified are: Basic digital literacy skills (empowering individuals): skills needed by every citizen to become 'digitally literate'. These are the skills needed to carry out basic functions such as using digital applications to communicate and carry out basic internet searches. Cybersecurity sits under this category. Digital skills for the general workforce (upskilling for the digital economy): all of category 1, plus skills needed in a workplace and generally linked to the use of applications developed by IT specialists. While the digital skills needed by the workforce are likely to differ across sectors, there will be some minimum

_

S. No	Framework Reference	Digital Skills Assessment Framework
		 requirements linked to processing information that will be applicable across all sectors. Digital skills for ICT professions (digitally innovative and creative individuals, organizations and businesses): All of categories 1 and 2, plus skills needed to work across the diverse IT sector. They include digital skills linked to the development of new digital technologies, and new products and services. Such skills are needed if the UK is to compare favorably with other nations about ICT investment and utilization.
9.	Which skills for the digital era? Returns to skills analysisOECDScience, and IndustryNorking	The study highlighted the skills needed for the Digital age as - ICT skills, Management and Communication Skills, Accountancy and Selling Skills, Advanced Numeracy Skills, Self-Organization Skills, Numeracy
10.	UK Basic Digital Skills Framework Tech Partnership, 2017	The basic digital skills framework included: Managing Information, Communicating, Transacting, Problem Solving, Creating
11.	Digital skills for life and work Broadband Commission for Sustainable Development, 2017	 The Broadband Commission for Sustainable Development - a joint initiative of the International Communication Union and UNESCO - regards digital skills as a continuum from basic to advanced skills: Basic functional digital skills allow people to access and use digital technologies (e.g. understanding basic ICT concepts, being able to manage computer files, use keyboards or touch-screen devices). Generic/intermediate digital skills allow people to use technologies in meaningful and beneficial ways (e.g. using work-related software, creating online content, evaluating online risks).

-

S. No	Framework Reference	Digital Skills Assessment Framework
		Advanced skills are those needed by ICT specialists
		(e.g. programming, app development) (Broadband
		Commission for Sustainable Development, 2017)
12.	IEA International	ICILS's framework defined computer and information
	Computer and	literacy as an individual's ability to use computers to
	Information Literacy	investigate, create and communicate to participate
	Study 2018	effectively at home, at school, in the workplace, and in
	Assessment	the community. The framework classified the literacy in
	Framework	below levels:
	International	Understanding computer use
	Computer and	 Gathering information
	Information Literacy	Producing information
	Study (ICILS) 2018	Digital communications
13.	Digital Skills Toolkit	The digital skills toolkit classifies digital skills along with
	International	levels: basic, intermediate, and advanced. The toolkit
	Telecommunication	specifically mentions the European Commission-the
	Union 2018	Digital Competence Framework for Citizens (or
		DigComp) and includes its competencies as:
		Information and data literacy
		Communication and collaboration
		Digital content creation
		Safety
		Problem solving
14.	A Global Framework of	UNESCO has adopted the EU's DigComp 2.0 as the
	Reference on Digital	reference digital literacy framework and based on it
	Literacy Skills for	developed its digital literacy framework with below
	Indicator 4.4.2	dimensions
	United Nations	Devices and software operations
	Educational, Scientific	Information and data literacy
	and Cultural	Communication and collaboration
	Organization, 2018	Digital content creation
		Safety
		Problem solving

S. No	Framework Reference	Digital Skills Assessment Framework
		Career-related competences
15.	OECD Skills Outlook	The skill for a digital ecosystem is classified as:
	2019: Thriving in a	skills for a digital world of work
	digital world,	skills for a digital society
	OECD, 2019	learning in a digital environment
		a comprehensive set of skills-related policies





Malawi: A brief Country Snapshot

2. Malawi - A brief Country Snapshot

Malawi is a landlocked country located south of the equator in sub-Saharan Africa. The country is bordered by the United Republic of Tanzania to the north and north-east, the People's Republic of Mozambique to the east and south and the Republic of Zambia to the west. The area of the country is 118,484 sq. km, more than 85% of which is land area. The remaining area is mostly covered by Lake Malawi, almost 475 km long running down Malawi's eastern boundary with Mozambique. The country is divided into three administrative regions: Northern (7 districts), Central (10 districts) and Southern regions (15 districts)¹¹

Population

- The population of the country is about 17.5 million people as per Census data 2018, with close to a 1:1 ratio for the proportion of males to females in the country ¹²
- The Northern region contributes the least to the population with just 13.2%. The central and southern region contribute 42.7% and 44.1% respectively¹³
- More than 80% of the Malawian population resides in rural areas
- Malawi remains a very young country with 45% of the population under the age of 15 years



Figure 5: Gender-wise Age Distribution in Malawi

¹³ Malawi Population and Housing Census, 2018

¹¹ Malawi Population and Housing Census 2018

¹² The World Bank Data. Accessed from <u>https://data.worldbank.org/indicator/SP.POP.BRTH.MF?locations=MW</u>

Economy

- Malawi is classified in the Least Developed Country (LDC) category. The economy is heavily dependent on agriculture, employing nearly 80% of the population.
- > The GNI per capita is as low as USD380 as compared to the global average of USD11,569 14 .
- Agriculture represents approximately one-third of GDP and the sector offers highest employment, with women accounting for more than half of those working in the sector



Figure 6: Gender-wise Sectoral Contribution to Total Employment (in %),

- The economy faces disadvantages due to insufficiencies in Infrastructure development and inadequate energy generation and distribution networks.¹⁵
- Owing to various economic challenges and infrastructural deficiencies Malawi ranks 141 out of 189 countries surveyed in 2016 for doing business.¹⁶
- The latest poverty figures show the national poverty rate increased slightly from 50.7% in 2010 to 51.5% in 2016, but extreme national poverty decreased from 24.5% in 2010/11 to 20.1 in 2016/17. Poverty is driven by low productivity in the agriculture sector, limited opportunities in non-farm activities, volatile economic growth, rapid population growth, and limited coverage of safety net programs and targeting challenges.
- Poverty and food-security make the lives of more than a million Malawian citizens vulnerable. More than one in three children under the age of five suffer from stunting. It has been estimated that stunting may contribute to economic losses from the foregone income of up to 3% of national GDP¹⁷.

¹⁴ Source: <u>https://data.worldbank.org/indicator/NY.GNP.PCAP.CD</u>

¹⁵ Project Appraisal Document Digital Malawi Program Phase I: Digital Foundations Project

¹⁶ Project Appraisal Document Digital Malawi Program Phase I: Digital Foundations Project

¹⁷ Population and Housing Census, 2018

Employment

- The labour force participation (15-64 age group) is 6.6 million making 72% of the population economically active.¹⁸
- The labour force participation rate (LFPR) was 69% for urban areas and 73% for rural areas. At the regional level, LFPR was 72% in the Northern region, 70% in the central region and 74% in the southern region.¹⁹



Figure 7: Unemployment rate (in %) by gender and location

The employment rate was 81.5% and unemployment stood at 18.5% with a higher incidence of unemployment in urban areas (28.2%) compared to rural areas (19.2%). This indicates limited opportunities in urban areas compared to rural areas where the agricultural sector is the major source of employment. Females (29.8%) are significantly more vulnerable to being unemployed in urban areas.²⁰



Figure 8: Population (in million) by employment status, sex and location

¹⁸ Malawi Population and Housing Census 2018

¹⁹ Malawi Population and Housing Census 2018

²⁰ Malawi Population and Housing Census, 2018

- Out of the total employed population, males and females made up an equal proportion of the cohort, however, in the unemployed cohort, the proportions are more unfavourably inclined towards females.
- Unemployment, particularly for youth (15-34 years), remains a persistent and growing challenge. More than one-fourth of youth finds themselves unemployed. There is also a significant number of youth (26%) in the age group 15-34 years of age that are economically inactive.



Figure 9: Unemployment rate (in %) location and sex

Education

According to Census data 2018, the literacy rate in Malawi is 68.6% for the population (aged 5+ years).



Figure 10: Region-wise Literacy Rate in Malawi (%)

- The northern region is the smallest of the three regions in Malawi with the highest literacy rate of 79.3%.
- > Almost one-fifth of the 15 million population of Malawi has never attended school
- Although primary education is free, only 55 per cent of boys and 45 per cent of girls finish primary school. Secondary and tertiary enrollment rates of 17% and 0.4% respectively are among the lowest in Africa.²¹



Figure 11: Gender-wise Population which Never Attended School (%)

Vocational training landscape of Malawi

- The nodal ministry for skill development and vocational training in Malawi is the Ministry of Labour, Skills and Innovation that steers and directs all the efforts of skilling and vocational training in Malawi towards a united objective of empowering the youth with marketable skills
- The responsibility for regulating, facilitating and promoting TEVET in Malawi is handled by the Technical, Entrepreneurial and Vocational Education and Training Authority (TEVETA), TEVETA is funded by employers through the TEVET Levy of 1% of basic annual payroll. TEVETA also ensures that the programs are aligned with national policy imperatives such as the National Education Sector Policy 2007-2017, Southern African Development Community (SADC) Protocol on Education, SADC Industrial Development Policy Framework, African Union TEVET Policy and the Sustainable Development Goals, among others²²

²¹ Project Appraisal Document Digital Malawi Program Phase I: Digital Foundations Project

²² TEVETA website, <u>https://tevetamw.com</u>
- Currently, there are 58 TEVETA registered training providers in Malawi
- The TEVET system in Malawi comprises formal and informal apprenticeship. Formal apprenticeship is a modular, Competency-Based Education and Training (CBET) delivered through registered TEVET institutions and industry associations. Formal apprenticeship is offered through National Technical Colleges (NTCs), Community Technical Colleges (CTCs) and Community Skills Development Centres (CSDCs)
- As of 2019-20, 6168 apprentices were enrolled into various national and community colleges as well as community skills development centres under the formal apprenticeship training program
- Informal apprenticeship in Malawi is a training approach that involves the transfer of knowledge and skills from a master craftsperson to a trainee taking place on the job within an enterprise or workplace. It absorbs more than 80% of the labour force in both rural and urban areas. Informal skills training is offered through skills development centres and master craft persons. A total of 6,641 beneficiaries accessed various training under this programme during 2019-20





Digital Malawi Program

3. Digital Malawi Program

Digital Landscape of Malawi

- Network Readiness Index 2019²³, ranks Malawi 117th among the 121 countries studied on the application and impact of ICT in economies around the world. The indicators also suggest a low rate of user adoption of smartphones and their mobile apps (social network and business apps). It is ranked 121 on indicator measuring mobile app development ecosystem.
- More than half of households in Malawi had a mobile phone while 16.4% had access to the Internet. The number of households that had a computer/laptop/tablet device was as low as 4.2% as per the Malawi Population and Housing Census, 2018





- Access to the internet was highest in the Southern region (23.2%) while a higher percentage of households in the northern region had mobile phones.
- The internet penetration stands very low at 15% (approximately 2.81 million users) as of 2019. Currently, 45% of the population has obtained mobile phone connections with close to 8.58 million users.²⁴

²³ World Information Technology and Services Alliance (WITSA) and Portulans Institute (PI), 2019. *NRI 2019*. Accessed from <u>https://networkreadinessindex.org/nri-2019-countries/#complete-ranking</u>

²⁴ Digital 2020 Malawi, Hootsuite

- Internet and mobile phone connection in Malawi have witnessed a 10% and 12% increase in 2020 as compared to 2019²⁵
- Low penetration of internet and mobile connections is a challenge that is further intensified by lack of affordability of internet and ICT infrastructure and tools. NRI 2019 ranked Malawi 118th on the affordability of mobile tariffs, being one of the most expensive countries with respect to the cost of mobile services. In Malawi, mobile phone expenses in a month account for almost half of an individual's average monthly salary ²⁶
- Institutions responsible for policy and governance of the ICT sector: Malawi Communications Regulatory Authority (MACRA) is the independent authority responsible for regulation and promotion of development within the communications, postal and broadcasting sectors. The Ministry of ICT is responsible for setting government policy and strategy within the sector and plays an oversight role for MACRA. The e-Government department within MICT is responsible for setting government IT policy and providing IT services to all Ministries, Departments and Agencies (MDAs).

Some countries have been able to build their nation's infrastructure and its people's competencies to leverage the dividends of digital services and technologies. However, Malawi due to its prevailing socioeconomic conditions is at a disadvantage and has not been able to harness the benefits of the digital wave around the world.

There needs to be a comprehensive ecosystem approach while building the foundations of a digital economy. The digital transformation must aim to enable every individual, business and government digitally. Digital technology, particularly mobile phones and mobile broadband can be a powerful enabler and equalizer. It has the potential to dramatically reduce Malawi's inherent disadvantages as a remote, landlocked country and the disadvantages of citizens in rural areas.

The National ICT Master Plan (2013):

The plan envisages to realize the vision of making Malawi a knowledge-based and informationrich economy by 2031. The plan was initiated in 2014 and over the next 18 years, the plan aims to achieve universal access to ICT services for all citizens and mainstreaming of ICT in all sectors of the economy as a means to deliver socio-economic development, in line with the Malawi Growth and Development Strategy II (MGDSII).

²⁵ Digital 2020 Malawi, Hootsuite

²⁶ Igunza, E. (2015). *Malawi's expensive mobile phone habit*. BBC Africa. Accessed from https://www.bbc.com/news/world-africa-31533397

The plan has identified ten priority areas across four strategic pillars which are:

- Innovation and Human Capital Development
- ICT Industry Development and E-Business
- ICT Infrastructure Development
- E-Government and Growth Sector Development

All these pillars are linked to strategic objectives which consist of a set of key initiatives. Each Key Initiative consists of programmes for implementation²⁷ with a set of planned outcomes envisaged

Table 2: Strategic pillars, priority areas, key initiatives and outcomes under the National ICT plan 2014-2031 for Malawi

Pillar 1	Innovation and I creative e-Ready	Human Capita / Generation	al Develop	oment - fosterin	g a
ICT priority areas	ICT leadership		Human ca	apital developmen	ıt
Key initiatives	 Building a knowledg Creating and Promo Develop a Culture of 	e society throu ting Local Digi f Research and	igh ICT enr tal Content Developm	iched learning : ent	
Outcomes	 Strong focus on intr All-inclusive training Produce a chain readiversification of the public, private sector Innovative and beth developed for the logonal 	oducing chang and skill build action that lea ne ICT sector or and individua ter solutions cal context.	es to tradi ing progra ds to socio in local co als for the pu	tional ways of lear mmes p-economic growt ontent creation t oblic sector speci	rning. th and by the ifically
Pillar 2	Governance, Act	ture Develog cessibility and	oment - d Usage	enhancing Int	ernet
ICT priority	ICT infrastructure	Responsive IC	CT legal	Universal access	to
areas	development	regulatory fra	amework	ICT and ICT relat services	ed
Key initiatives	 Enhancing infrastroversight to facilitate Instituting appropriate planning and development 	ucture, acces e sustainabilit [,] ate governance pment	s, ICT po y estructures	blicies and regu s to drive infrastru	llatory ucture

²⁷ NATIONAL ICT MASTER PLAN, Malawi

•				
	 instituting app planning and of Building gover e-government 	propriate governan development rnment infrastruct : ecosystem	ice structures to dr ure to develop and	ive infrastructure support a vibrant
Outcomes	 Improve access Increased sec Create an ensector. Expanded telecommunic Appropriate insector 	ssibility and efficien urity of online tran abling environmer nsion of possible cations and broadca infrastructure to conment for the ad	ncy of ICT Infrastru sactions, data and nt for the develop e business ventu asting market. support ICT initia option of Governm	octure privacy oment of the ICT res. Competitive tives. Create an ent ICT
Pillar 3	ICT Industr	y Development a environment	nd E-Business - I	building a pro-
ICT priority areas	ICT Industries Dev	velopment		
Key initiatives	 Stimulating IC Developing E- Enabling proproducts and Enabling othe Facilitating L stakeholders 	T Demand to enco Business duction, distributi Services r sectors through I eadership and co	urage E-Commerce ion and promotic CT pordination of Eff	e Adoption on of Local ICT Forts among key
Outcomes	 Strong focus of All-inclusive to Contribute to creation Create a pro- development Increase the Government. 	on introducing char raining and skills-b the expansion of b e-Enterprise enviro of e-business and t ease and reduce t	nges to traditional uilding programme ousiness capability onment with specia he ICT Sector. the cost of doing b	ways of learning. s. and stimulate job al attention to the pusiness with the
Pillar 4	E-Governi	ment and Growth grated e-governi	n Sector Develop ment	ment - Working
ICT priority areas	E-Government Services	ICT in Priority Growth Sectors	National Security	International Cooperation

Key initiatives	Collaborating to implement shared ICT systems and processes
	Serving citizens through multi-channel service delivery
Outcomes	Allow for more citizen participation by creating a virtual space for
	concerns and ideas on the government initiatives.
	 E-service delivery to all citizens. Ensure citizen protection of data,
	information etc
	Improved government efficiencies and potential for Public-Private
	Partnerships.
	Technical development of high-speed connectivity, the establishment
	of service delivery standards and content relevance and usage.
	Support multi-channel service delivery to improve efficiency and
	access to information.

Digital Malawi Program

The World Bank is supporting the Government of Malawi through a multimillion-dollar digital transformation project being implemented by the Public Private Partnership Commission in Malawi. The objective of the Digital Malawi project is to expand the reach and improve the access of ICT infrastructure for the public and private sectors, improvement of e-governance, access to government services and enhancing public service delivery are the key drivers to the digital transformation of Malawi

Table 3: Overview of Digital Malawi Program

The program seeks to leverage digital technology to drive economic growth, innovation and job creation, access to services, information and markets, and to increase government efficiency and transparency Key pillars of the program			
Affordability and accessibility of ICT infrastructure	Demand-driven multi-layered digital skills and job creation strategy to bridge the digital divide	Digital ecosystem and connected economy through public-private collaboration	Effective e- Governance to support new initiatives
Main program components			
Digital Ecosystem	Contribute to making Malawi a more attractive and competitive place for digital investment and innovation, ensuring that the benefits of digital technology are reaching all citizens		

Subcomponents	1.1. ICT Regulation, Strategy and Policy Development
	1.2. Regulatory and Policy Implementation, Capacity Building and
	Institutional Development
	1.3. Digital Skills Development and Innovation
Digital Connectivity	Leverage strategic public investments and incentives to improve
<u></u>	access to high speed, affordable connectivity for government,
•	citizens and businesses across Malawi
Subcomponents	2.1. High-speed connectivity for priority public institutions
	2.2. High-speed connectivity and access to online academic content
	for higher education institutions
	2.3. Innovative Rural Broadband Access Solutions through private
	sector investments
Digital Platforms	Build the core infrastructure and capacity necessary to support
and Services	digital public service delivery and to enhance the efficiency of the
e <u>a</u>	government's internal operations
Subcomponents	3.1. Strengthening Institutional Capacity to Deliver Digital Services
	and capacity building of staff and other institutional personnel
	3.2. Support the development of the common elements of the
	shared public services delivery platform
	3.3. Support a select number of digital applications and services to
	demonstrate the use of the shared platform once sufficient capacity
	is built and the Shared Digital Public Services Delivery Platform is in
	place
Project	Component four will support essential project management
Management	functions of the project

The Digital Malawi project is being rolled out in two phases:

- Malawi Digital Foundations Project focusing on establishing a base level of connectivity, market competitiveness, digital skills and digital service delivery infrastructure in order to catch up with the progress of peer countries
- Malawi Digital Acceleration Project, to focus on leveraging improved connectivity and public digital service delivery capacity to accelerate growth of the digital economy, encourage private and public innovation utilizing digital technology, and support the expansion of digital services offerings across sectors

The Malawi Digital Foundations Project, and the wider Digital Malawi Program being implemented by the Public Private Partnership Commission (PPPC), are products of the Malawi Government's aim to integrate Malawi into the global digital economy. The projects aim to benefit all citizens of Malawi, both at micro and macro levels

Public sector	At Macro level
Lower cost, higher quality access to	Increased economic growth through
the internet within public institutions	developments in the
Ability to launch new digital services	telecommunications and IT sectors
quickly, economically and securely	Technology diffusion and innovation
Taking advantage of data analytics to	across all productive sectors
improve policy and decision-making	
Private sector	For Individuals
Establishment of a seamless, open-	Access to lower cost, higher quality
access national transmission	digital communications services
infrastructure	Increased affordability and access to
Improved and enabling digital	broadband/mobile internet services
environment with lower costs	 Access to digital public and private
Enhanced coverage in new areas with	services
increased internet penetration enable	Digital skills development and
the rollout of new services and digital	entrepreneurship opportunities
content	

Table 4: Benefits of Malawi Digital foundations projects across various stakeholders

ICT as a key enabler for skills, training and education in Malawi - challenges and opportunities

Malawi's digital landscape is characterized by significant digital skills gaps and low uptake of digital technology, which is a function of low levels of basic digital literacy rates, scarce penetration of internet and technology services and high cost of technology led services. This is hindering Malawi's participation in the digital economy and constraining the ability of its citizens and businesses to access digital services²⁸.

Phase 1 of the Digital Malawi Project aims to address the above challenges through targeted digital skills and competency training programs. Some of the key areas of training intervention are provided below, as envisaged under the Digital Skills and Innovation, which is a subcomponent of the Malawi Digital Foundations project.

²⁸ The Digital Malawi Program Phase I: Digital Foundations Project Grant Manual

Malawian youth and population to take leverage of the dividends from the Digital Malawi Program			
Digital skills training (long term)	Digital skills training (short term)	Incubation and acceleration support to digital start-ups	Digital knowledge sharing sessions with SMEs
Women-only digital skills & entrepreneurship programmes	Mentorship by successful entrepreneurs and investors	Enhancing Business with technology skills training	Leadership and Soft Skills Training
Networking and engagement skills	Formal incubation programs	Training on digital platforms for marketing	Mass ICT literacy in Finance, Agriculture, Education and Health

The need for digital skills goes beyond IT as a career for young people. Malawi needs a population that can use digital tools efficiently and update their skills to deal with the wide-ranging transformations brought about by digitalization. Empowering a population with digital skills essentially deploys a cascade strategy, that ensured that through the digital enhancement of human and institutional capacity digital skills are encouraged, digital businesses are supported and digital public service offerings are sought, thereby inviting increased investment into the economy, productivity increase and job creation

Rationale of Digital Skills Ecosystem and Gap Assessment in Malawi

Countrywide digital transformation requires a pre-assessment of the population, labour market, public sector and education systems to understand their readiness to adapt to the technology influx and to address this requirement 'Digital Skills Ecosystem and Gap Assessment and Strategy Formulation in Malawi' has been commissioned by the Government of Malawi through Public Private Partnership Commission (PPPC).

The objectives and desired actionable under the Digital Malawi Project will be better strategised for implementation through the results of the study, thereby highlighting the challenges and opportunities that Malawi presents in the context of the digital transformation journey.

This Digital Skills Ecosystem and Gap Assessment primarily aims to :

Address the information gap for systematic, comprehensive data on the demand for digital skills in Malawi in light of the ongoing and future digital enhancements

- Highlight shortages of digital skills across levels through discussions with key stakeholders ie. how they fill current positions, dependency on global manpower, and how they expect demand to grow.
- Assess the adequacy of supply (from schools, colleges, vocational training etc) vis a vis the potential need for digitally skilled manpower in industries and occupations that are being impacted by digital technologies
- Assess the current ICT infrastructure in the education and training sector to enhance the programs under the Malawi Education Sector Improvement Project for introducing elearning and digital platforms. This assessment will also help in the situational analysis of the educations sector for their readiness to adopt technology and it will also design recommended programs and courses to address these challenges.
- > Help frame strategies to address unemployment through integrated digital solutions

Hence, the program will help the stakeholders to design a demand-driven approach for framing and implementing digital skills empowerment programs. This will help to map the skills required in a digital economy against opportunities to be generated in the new digital Malawian economy. And the gaps thus identified will help prioritize the intervention areas for the Digital Malawi Project and formulate the right strategy to close these gaps.





Figure 13: Objectives of the assignment

Scope and stakeholders of the assignment

The scope under this project is two-prongedDigital Skills Ecosystem and Gap AssessmentDigital Skills Development Strategy• Evaluate the skills level of the economy across social groups - ages, social and income classes, gender, regions as well as disabilities• Inform the numbers that will be targeted for a mass literacy project and the number of the trainees who will receive more high-level digital skills training• Technical and operational assessment of the digital ecosystem in the region including public and private sector actors, academia• Recommendations for a mix of short- term and long-term courses for Fundamental Digital Literacy and Advanced Digital Skills for employment• Demand assessment of the jobs /economic opportunities available, locally, regionally, and globally• A framework of actionable for engagement of the private sector• Review the supply-side ecosystem (both manpower and infrastructure) to assess the availability of manpower in Malawi for the current digital jobs opportunities and those to be created• A skills gap analysis to identify available skills and gaps within current and future industry demandsStakeholders for the project span across the Govt. of Malawi, policymakers, industry, education and training sector, social/developmental sector organization,		
Digital Skills Ecosystem and Gap AssessmentDigital Skills Development StrategyEvaluate the skills level of the economy across social groups - ages, social and income classes, gender, regions as well as disabilitiesInform the numbers that will be targeted for a mass literacy project and the number of the trainees who will receive more high-level digital skills trainingTechnical and operational assessment of the digital ecosystem in the region including public and private sector actors, academiaRecommendations for a mix of short- term and long-term courses for Fundamental Digital Literacy and Advanced Digital Skills for employmentDemand assessment of the jobs /economic opportunities available, locally, regionally, and globallyA framework of actionable for engagement of the private sectorReview the supply-side ecosystem (both manpower and infrastructure) to assess the availability of manpower in Malawi for those to be createdEnsuring Inclusivity for disadvantaged groups (Gender, PWDs, etc)A skills gap analysis to identify available skills and gaps within current and future industry demandsEovy. of Malawi, policymakers, industry, education and training sector, social/developmental sector organization,		
 Evaluate the skills level of the economy across social groups - ages, social and income classes, gender, regions as well as disabilities Technical and operational assessment of the digital ecosystem in the region including public and private sector actors, academia Demand assessment of the jobs /economic opportunities available, locally, regionally, and globally Review the supply-side ecosystem (both manpower and infrastructure) to assess the availability of manpower in Malawi for the current digital jobs opportunities and those to be created A skills gap analysis to identify available skills and gaps within current and future industry demands Stakeholders for the project span across the Govt. of Malawi, policymakers, industry, education and training sector, social/developmental sector organization, 		
 across social groups - ages, social and income classes, gender, regions as well as disabilities Technical and operational assessment of the digital ecosystem in the region including public and private sector actors, academia Demand assessment of the jobs /economic opportunities available, locally, regionally, and globally Review the supply-side ecosystem (both manpower and infrastructure) to assess the availability of manpower in Malawi for the current digital jobs opportunities and those to be created A skills gap analysis to identify available skills and gaps within current and future industry demands Stakeholders for the project span across the Govt. of Malawi, policymakers, industry, education and training sector, social/developmental sector organization, 		
 income classes, gender, regions as well as disabilities Technical and operational assessment of the digital ecosystem in the region including public and private sector actors, academia Demand assessment of the jobs /economic opportunities available, locally, regionally, and globally Review the supply-side ecosystem (both manpower and infrastructure) to assess the availability of manpower in Malawi for the current digital jobs opportunities and those to be created A skills gap analysis to identify available skills and gaps within current and future industry demands Stakeholders for the project span across the Govt. of Malawi, policymakers, industry, education and training sector, social/developmental sector organization, 		
 as disabilities Technical and operational assessment of the digital ecosystem in the region including public and private sector actors, academia Demand assessment of the jobs /economic opportunities available, locally, regionally, and globally Review the supply-side ecosystem (both manpower and infrastructure) to assess the availability of manpower in Malawi for the current digital jobs opportunities and those to be created A skills gap analysis to identify available skills and gaps within current and future industry demands Stakeholders for the project span across the Govt. of Malawi, policymakers, industry, education and training sector, social/developmental sector organization, 		
 Technical and operational assessment of the digital ecosystem in the region including public and private sector actors, academia Demand assessment of the jobs /economic opportunities available, locally, regionally, and globally Review the supply-side ecosystem (both manpower and infrastructure) to assess the availability of manpower in Malawi for the current digital jobs opportunities and those to be created A skills gap analysis to identify available skills and gaps within current and future industry demands Stakeholders for the project span across the Govt. of Malawi, policymakers, industry, education and training sector, social/developmental sector organization, 		
 the digital ecosystem in the region including public and private sector actors, academia Demand assessment of the jobs /economic opportunities available, locally, regionally, and globally Review the supply-side ecosystem (both manpower and infrastructure) to assess the availability of manpower in Malawi for the current digital jobs opportunities and those to be created A skills gap analysis to identify available skills and gaps within current and future industry demands Stakeholders for the project span across the Govt. of Malawi, policymakers, industry, education and training sector, social/developmental sector organization, 		
 including public and private sector actors, academia Demand assessment of the jobs /economic opportunities available, locally, regionally, and globally Review the supply-side ecosystem (both manpower and infrastructure) to assess the availability of manpower in Malawi for the current digital jobs opportunities and those to be created A skills gap analysis to identify available skills and gaps within current and future industry demands Stakeholders for the project span across the Govt. of Malawi, policymakers, industry, education and training sector, social/developmental sector organization, 		
 academia Demand assessment of the jobs /economic opportunities available, locally, regionally, and globally Review the supply-side ecosystem (both manpower and infrastructure) to assess the availability of manpower in Malawi for the current digital jobs opportunities and those to be created A skills gap analysis to identify available skills and gaps within current and future industry demands Stakeholders for the project span across the Govt. of Malawi, policymakers, industry, education and training sector, social/developmental sector organization, 		
 Demand assessment of the jobs /economic opportunities available, locally, regionally, and globally A framework of actionable for engagement of the private sector Review the supply-side ecosystem (both manpower and infrastructure) to assess the availability of manpower in Malawi for the current digital jobs opportunities and those to be created A skills gap analysis to identify available skills and gaps within current and future industry demands Stakeholders for the project span across the Govt. of Malawi, policymakers, industry, education and training sector, social/developmental sector organization, 		
 /economic opportunities available, locally, regionally, and globally Review the supply-side ecosystem (both manpower and infrastructure) to assess the availability of manpower in Malawi for the current digital jobs opportunities and those to be created A skills gap analysis to identify available skills and gaps within current and future industry demands Stakeholders for the project span across the Govt. of Malawi, policymakers, industry, education and training sector, social/developmental sector organization, 		
 locally, regionally, and globally Review the supply-side ecosystem (both manpower and infrastructure) to assess the availability of manpower in Malawi for the current digital jobs opportunities and those to be created A skills gap analysis to identify available skills and gaps within current and future industry demands Stakeholders for the project span across the Govt. of Malawi, policymakers, industry, education and training sector, social/developmental sector organization, 		
 Review the supply-side ecosystem (both manpower and infrastructure) to assess the availability of manpower in Malawi for the current digital jobs opportunities and those to be created A skills gap analysis to identify available skills and gaps within current and future industry demands Stakeholders for the project span across the Govt. of Malawi, policymakers, industry, education and training sector, social/developmental sector organization, 		
 manpower and infrastructure) to assess the availability of manpower in Malawi for the current digital jobs opportunities and those to be created A skills gap analysis to identify available skills and gaps within current and future industry demands Stakeholders for the project span across the Govt. of Malawi, policymakers, industry, education and training sector, social/developmental sector organization,		
 the availability of manpower in Malawi for the current digital jobs opportunities and those to be created A skills gap analysis to identify available skills and gaps within current and future industry demands Stakeholders for the project span across the Govt. of Malawi, policymakers, industry, education and training sector, social/developmental sector organization, 		
 the current digital jobs opportunities and those to be created A skills gap analysis to identify available skills and gaps within current and future industry demands Stakeholders for the project span across the Govt. of Malawi, policymakers, industry, education and training sector, social/developmental sector organization, 		
 those to be created A skills gap analysis to identify available skills and gaps within current and future industry demands Stakeholders for the project span across the Govt. of Malawi, policymakers, industry, education and training sector, social/developmental sector organization, 		
 A skills gap analysis to identify available skills and gaps within current and future industry demands Stakeholders for the project span across the Govt. of Malawi, policymakers, industry, education and training sector, social/developmental sector organization, 		
skills and gaps within current and future industry demands Stakeholders for the project span across the Govt. of Malawi, policymakers, industry, education and training sector, social/developmental sector organization,		
industry demands Stakeholders for the project span across the Govt. of Malawi, policymakers, industry, education and training sector, social/developmental sector organization,		
Stakeholders for the project span across the Govt. of Malawi, policymakers, industry, education and training sector, social/developmental sector organization,		
education and training sector, social/developmental sector organization,		
cadeation and training sector, social, acterophicital sector organization,		
professionals/entrepreneurs and the industry at large in the technology sector in Malawi who		
will play an important role while the study is executed, by providing their inputs and valuable		
recommendations		
Covernment and Public Sector: Govt. Dept & Ministries and parastatals		
Industries: Private and Public sector.		
Tochnology Hubs and Tochnical (Digital Entropropours		
 Schools colleges /universities /polytochnics vocational education /training control 		
Teacher training institutes		
NGOs international development agencies HP agencies other key informants and		

influencers

The larger Malawian population through their participation in the ecosystem assessment for digital skills

Digital Skill Assessment of Malawian population

4. Digital Skill Assessment of Malawian Population

The basic competency level includes the important entry-level functional skills required to make rudimentary use of digital devices and applications. Foundational skills that are essential for being able to access and use digital devices/technologies. These skills allow an individual to operate devices, to connect to the internet, to set up accounts and profiles, and to access information and resources.

4.1 Profile of Respondents covered for the study

Random Sampling was done across various defined schemas - Age / Male / Female / PWD / Urban / Rural / Income groups for selection of respondents for the study which has been weighted and projected to Malawi Census 2018.

A total of 2,793 interviews were achieved against a targeted sample size of 2,600 respondents across all schemas across all districts in Malawi. These interviews were conducted face to face with the respondents among the rural and urban population. Primary data collection included respondents



Figure 14: Respondent Profile for Digital Skill Assessment

from the following schemas: from ages 6 to 14 years, 15 to 24 years, 25 to 34 years, 35 to 44 years, 45 to 54 years, 55 and above.

It was observed during the course of primary data collection, the female respondents were less



willing to be interviewed than their male counterparts while team also experienced resistance from parents/guardians of minors (5 - 14 years).

According to the Malawi Demographic and Health Survey of 2019, on an average, 47 percent of women in Malawi

Figure 15: Respondent Profile by Marital Status

are married by the age of 18 while 13 percent are married by the age of 13. There is a disparity between the rural and urban areas. By 18 years, 60 percent of rural women are married compared with the 34 percent of urban women.

Locations selected for covering respondents

In order to achieve nationwide representative coverage, all 32 main Districts & Sub-Districts



were selected for primary data collection. All interviews were conducted in Malawian languages viz., Chichewa, Tumbuka and English. The main languages spoken in Malawi are Chichewa - 93%, English - 56% and Tumbuka - 23%. The dominant religion in the country is Christianity - 88% followed by Islam -11%.

remain for eight years. Secondary

education begins when students reach 14

years of age. It lasts for four years and is

divided into two sets of two-year courses.

Education in Malawi stresses upon

academic preparation leading to access

to secondary school and universities.

However, only few students go on to high school or university. There is a high

Figure 16: Respondent Profile by Location

Educational Profile of Respondents covered for the study



In Malawi, primary education is universal and compulsory. Students enter school at age six and

Figure 17: Educational Profile of Respondents

dropout rate particularly among primary school pupils.

It was observed, only 23 percent of Malawian citizens experienced any digital learning as part of school curriculum. This shows there is a low level of deployment and utilization of ICT within the educational system in Malawi



Figure 18: Digital Exposure of Respondents

4.2 Overview of Skill Competency Level - Foundational Skills

Analysing the data on foundational skills indicate that on average 44% of the citizens have foundational digital skills. The statistics on Malawian citizens' ability to use basic mobile phone is encouraging, with more than 70% of the citizens having this foundational competency. With 60% of the population having the foundational competency to operate a smartphone provides a suitable ground for the government for necessary digital intervention to support digital delivery of public services. This competency also provides a favourable opportunity for the private sector towards launch of products and services in the digital mode. Further, the survey also indicates that 15% of the population can be classified as having none of the digital foundational skills.

It is worth noting that more than 60% of the Malawian population lacks the competency of operating a computer and accessing internet on mobile device. The gap in the aforesaid competency will present a major challenge towards digital inclusion and access to digital products and services.



Figure 19: Foundational Digital Skills in Malawi

On further investigation of the foundational skills competency suggests a significant divide in the attainment of this competency between the population in rural and urban areas. On majority of the foundational digital competency, rural citizens are lagging behind counterpart in the urban and semi-urban areas. It is worth highlighting the critical competency gap on computer skills across the demographics.



Figure 20: Foundational Digital Skills across Rural-Urban

Analysis of the foundational skills based on gender suggests the foundational competency of female lags relatively behind the males. 46% male in Malawi can operate a computer against only 26% female. While more than half the female population knew how to operate a smartphone but only 30% knew how to access internet and find information using smartphones. The foundational digital competency of females is below the national average on most of the competency parameters with 20% female with no digital skills. It is also critical that the foundational competency of accessing internet be improved as at the current level is almost 50 percent of the Malawian population lacks the skills needed to access internet on their mobile device.



Figure 21: Gender-wise Foundational Digital Skills

4.3 Overview of Skill Competency Level - Intermediary Digital Skills

A broad range of intermediate digital skills and competencies are required to make use of digital technologies in a meaningful and beneficial way. These skills highlight the foundational importance of 'technical fluency' required to use digital devices and software as well as to access information.

It also highlights the importance of helping individuals comprehend, contextualize and critically evaluate what technologies are doing and towards what extent they are being used. It then shows the 'creative' skills that lie at the heart of making an active contribution to digital society (Broadband Commission for Sustainable Development, 2017).

Taken as a whole, the below are sets of 'digital life skills' that enable an individual to make substantive and beneficial use of online applications and services. These intermediary digital life skills are as follows:

- Information literacy and Data literacy
- Communication and collaboration
- Digital content creation
- Digital rights
- Digital Transacting
- Digital problem solving
- Workplace career related

Information literacy and Data literacy

The information literacy and data literacy skills highlight the various aspects of information handling and use, including: an individual's awareness of their information needs; the ability to locate and retrieve digital information and content; ability to evaluate and judge the relevance and reliability of information sources; and ability to store, manage, and organize digital information and content.

The survey results indicate that more than 40% of the Malawian population can be classified as having no competency on any dimension of the information and data literacy skills. As this competency highlights individual's awareness on handling and retrieving information, the low competency level will present significant challenge towards the desire of the citizens to have access to digital contents. As observed, 65% of the citizens have shown limitation in their ability to retrieve information online.

A closer look at the task based information and data literacy skills (Use a search engine to look for information online, find a website visited before) suggest that at the national level only a third of the population have the competency on task related aspects of information and data literacy skills.



Figure 22: Information and Data Literacy Skills

Similar, to foundational skills, the survey highlighted the significant competency gender gap in information and data literacy skills. The competency of the females is below the national average on all the dimensions of the information and data literacy skills. Less than 30% of the female citizens have shown competency in using search engine for information. This gap in

accessing information online presents a critical gap area towards digital empowerment of the females.



Figure 23: Gender-wise Information and Data Literacy Skills

Further, the rural and urban competency gap is also evident on analysing the data on information and data literacy skills. The citizens in the rural areas lack the digital competency related to information and data literacy aspects. Almost half of the rural population do not possess any of the data on information and data literacy skills while 70% of the urban population possess atleast one or more of these skills. There is critical gap towards digital empowerment and rolling out of services on a digital platform.



Figure 24: Information and Data Literacy Skills across Rural/Urban

Communication and collaboration competency

These skills encompass using digital technologies to interact and share with others such as Facebook, twitter, WhatsApp etc, particularly what is described as 'participating in society through public and private digital services and participatory citizenship'. In a digitally connected world communication and collaboration plays a critical role not only in developing content but also in improving the awareness of the citizens on digital skills products and services.



Figure 25: Communication and collaboration competency

Taking into consideration the low level of information and data literacy skills, the national statistics on communication and collaboration present an encouraging picture for the advancement. As it can be seen more than 40% of the citizens can collaborate and communicate through internet-based calls, emails, share information online. Higher competence of the citizens on communication and collaboration will help in ensuring the participation of the citizens in public dialogue on various issues concerning public service. This also presents suitable ground for the public and private agencies to engage with citizens in improving their digital competency.

However, there is a need for significant effort to uplift the competency of the citizens in the rural areas as their competency is below the national average and from that of the citizens in urban areas. The impetus of the Public agencies in Malawi to improve digital penetration will require improving the digital competency in the rural areas. A fruitful inclusion of the citizens in national dialogue will only be possible if citizens in the rural areas are also supported in improving their competency on communication and collaboration.



Figure 26: Communication and collaboration competency across Rural/Urban

Digital content creation

Creative skills are required to create content of acceptable quality to be published and shared over digital medium. Digital media requires user-generated content such as websites, weblogs, bulletin boards, news groups, chat forums, videos, and music. The essential notions of literacy ranges from critically consuming content to using tools of content creation. Digital content skills range from ability to develop digital contents to integrating and re-elaborating digital contents.



Figure 27: Digital content creation Skills

Assessment of digital content creation competency suggests a crucial gap as almost half of the population have shown lack of ability on each of the five dimensions of digital content creation.

The current competency level of the Malawian population is almost half in comparison to developed nations like United Kingdom (UK). A similar assessment of digital content creation competency in UK found the levels to be 86%²⁹.

40% of the respondents have shown the ability to complete online application forms which include personal information. As skills are necessary to improve citizens' competency for the citizens to participate in digital initiatives independently. In absence of these skills, citizens may not be able to participate and take benefits of many of the schemes of the government that require some level of competency in providing inputs digitally by beneficiaries. Further, on closer examination of the survey responses, highlight the crucial gender gap across elements of digital content creation.



Figure 28: Gender-wise Digital content creation

Digital rights

These skills are important for digital empowerment among the Malawian population. It includes knowledge on cyber safety which is important to address concerns like- cyber risks & online hazards and corresponding awareness on digital rights. These skills assess the users' understanding of digital threats and how they can practise their digital rights. Awareness on digital rights is increasingly becoming critical with the rise in cyber-attacks and occurrence of frauds worldwide. Further, the way digital devices and services have penetrated in our daily lives it becomes necessary to have awareness about protecting devices and digital content, and to understand risks and threats in digital environments. The survey response presents a challenging picture regarding awareness about digital rights among Malawian citizens with only 26% citizens agreeing to have to knowledge of protection from digital threats. However, the

²⁹ Benchmarking the digital and financial capability of consumers in the UK (2017).

competency of citizens on the information sharing aspect of digital rights present an encouraging picture with approximately half the respondents showing this competency.



Figure 29: Awareness of Digital Rights in Malawi

However, the assessment of the digital rights competency like other aspects of digitals skills presents a deep gender divide. This is especially concerning given the rise in digital frauds targeting females. The competency level of female respondents is below 30% on four out of the six aspects of digital rights.



Figure 30: Gender-wise Awareness of Digital Rights in Malawi

Transacting

These are the skills necessary for online transactions and financial management. Transacting skills are especially important as they support an individual in undertaking digital financial transactions. Digitization presents a promising opportunity for bringing products and services within the reach of the bottom of the pyramid segment of the population who have long being neglected due to their low economic potential. Digitization is especially critical for promoting financial inclusion.

Critical attention is required on improving the competency of the Malawian citizens on digital transacting skills, as more than half of the population lack the digital transacting skills. The survey data indicates, only one third of the respondents showing the ability to buy products and services online. With 42% of the respondents showing ability to install mobile applications, this segment of the population can be tapped for increasing the penetration of digital services. Malawian citizens in rural and hinterlands lack the access to financial services, digital financial products can help in increasing financial inclusion.

The survey data suggests significant disparity in attainment of digital transacting skills between rural and urban areas and male and female groups. Citizens in urban areas have significantly higher digital transacting skills relative to rural citizenry. This digital divide confirms the better opportunity for enhancing digital skills in urban areas through better access to internet and educational institutions.



Figure 31: Transacting Skills in Malawi



Figure 32: Transacting Skills in Malawi across Rural/Urban

Digital problem solving

The digital problem-solving skills encompass the skills to verify the source of information found online and solving problem with a device or digital services using online help. These skills are specifically aimed at accessing respondent's ability to identify technical problems when operating devices and using digital environments, and to solve them. The problem-solving skills also recognizes the respondent's ability to identify the gap in their digital competency and seek resources to overcome them. Another important aspect of problem-solving skills is the ability to search information and resources for self-development in digital medium.



Figure 33: Digital problem-solving Skills in Malawi

The analysis of survey responses presents an especially concerning picture of the digital problem-solving competency. Only 23% of the respondents have shown affirmation towards digital problem-solving competency. Among all the dimensions of the digital skills the achievement of problem-solving skills is especially low among the citizens. It is important to note that half of the respondents have highlighted their inability on all the 7 aspects of digital problem-solving competency.

Workplace career related

These are skills required to operate specialised digital technologies and to understand, analyse and evaluate specialised data, information and digital content for a particular field. These skills are required for performing basic to intermediary functions in a digital workplace.

The way workplace has been impacted by digital technologies is beyond imagination and has contributed to automation. Robots are taking on more and more routine tasks, displacing workers from some jobs. At the same time, workers in other jobs can call on ever more sophisticated technology to help them perform their tasks better. In this landscape, it is urgent for countries to focus on building the skills of workers whose jobs are at high risk of automation³⁰.

³⁰ OECD Skills Outlook 2019: THRIVING IN A DIGITAL WORLD. <u>https://www.oecd-ilibrary.org/education/oecd-skills-outlook-2019_df80bc12-</u>



Figure 34: Workplace career related Skills in Malawi

Malawi ranks poorly compared to her peers in the development of its market for telecommunications and other digital services, and this is preventing the country from achieving wider digital dividends. The survey statistics present a very challenging picture for Malawi to develop a domestic industry based on ICT. The survey respondents have reported low levels of workplace career related digital skills. The skills analysed in digital career related competencies includes online networking, use of spreadsheets & data analysis, word processor and utilization of online employment search services.

To thrive in a digital workplace, workers need a broad mix of skills - strong cognitive and socioemotional skills, as well as digital skills. The exposure of the workplace to digitization is closely linked to the requirement for digital skills by workforce. On the other dimension, digitalization has made the problem of skills obsolescence more prominent due to the rapid changes both in hardware (smartphones, tablets) and software (more advanced programs, new features). This skills obsolescence has made upskilling even more critical for workers to ensure their competitiveness. This change in the workplace is presenting incentives for workers to develop their skills. As they tend to perform a greater variety of tasks, they are more likely to learn new work-related tools and methods during their careers.

en#:~:text=This%20edition%20of%20the%20OECD,among%20and%20within%20countries'%20populatio ns.

4.4 Overview of Skill Competency Level - Advanced Digital Skills

These skills form the basis of most users' everyday engagements with digital technologies. These skills allow users to make use of digital technologies in notably empowering and transformative ways. These include ICT specialist skills, programming skills, skills on big data, machine learning, and artificial intelligence to program or develop applications and manage networks. These skills usually result from advanced education and training, as well as extensive self-tuition and practical experience.



Figure 35: Advanced Digital Skills in Malawi

A closer look at these skills will highlight that these are today the very core skills that have become pervasive in the present workplace and it would be difficult to imagine a digital worker without these skills. However, the survey data that more than 75% of the population lack these skills. The low competency accomplishment on advanced digital skills will not only make it difficult for aspiring youth to enter job market for digital skills but will significantly limit the ability of the local ICT industry to grow and expand. One of the aspects of the advanced digital skills: knowledge of programming languages like C/C++/Java/.Net/Python etc; only 10% of the survey respondents have shown accomplishment of these programming skills. It can be appreciated that majority of the global digital economy is running on the platforms based on these programming languages. The low competency of Malawian population on advanced digital skills can be seen as one of the precursors to the low ranking of Malawi in global digital economy ecosystem. The future of digital Malawi will heavily be dependent on programs to enhance the advanced digital skills of the population.

Analysis of advanced digital skills through the age lens lend some interesting insights. The analysis of the survey response indicates that workforce in the age group of 15-34 years have the highest level of competency among all the age groups. This insight indicate that these groups have acquired advanced digital skills either in education or at workplace.



Figure 36: Age-wise Advanced Digital Skills in Malawi

Analysis of the responses on educational background present a similar picture. The respondents with technical educational background are the largest group having these skills. This indicate technical educational institutes to be the training ground for advanced digital skills.



Figure 37: Advanced Digital Skills in Malawi as per Educational Background

Digital Skills and Learning in Malawi

5 Digital Skills and Learning in Malawi

Development of human capital has a holistic impact on the level of knowledge, health and economic pace of a country, and is the tool for empowering the workforce with enhanced productivity. In the current context of digital skills, the discourse of human capital holds twin significance, firstly, the changing nature of employment warrants for new level of skills and knowledge to be able to perform and stay relevant with the influx of technology and secondly, the task of policy makers and institutional leaders to ensure that the academia and learning work is updated to the needs of the new era. In this context, this chapter aims to achieve the following:

- AS-IS situational analysis of the digital readiness of the schools to participate in the digital skills and competency development of the children of Malawi from primary, through secondary and to tertiary levels of education
- Assessment of TVET ecosystem to address the digital learning needs of the youth





Figure 38: Formal Education System in Malawi

Framework of institutions

Institutional highlights

- Total number of primary schools in Malawi 6194³¹
- Total number of secondary schools in Malawi 1452³²
- ▶ There are 22 universities in Malawi for higher education
- There are 6 specialized institutes for Management, Journalism, Tourism and staff development in Malawi
- There are 23 colleges in Malawi
- Number registered vocational education and training providers 58
- There are 14 community technical colleges and 23 Community Skills Development Centres

Key figures and statistics

Over 46% of the Malawian population is under 15 years of age while 73% under 30 years of age, making it a nation with a young bulging population³³ Literacy rate of the country stands at 68%, (71% males, 65% females) ³⁴ The gross enrolment rate at the primary level was over 100% and 26% at secondary levels³⁵ Out of the population of the country aged 5 years and above ~20% never attended school³⁶ In the age cohort of 15 - 39 years - 15% of the youth has never attended schools, while 38% of the cohort in the age group of 40 years and above has never attended school Completion rate at secondary rate was noted at 24% and primary to secondary transition rate was recorded at 36% Development of resources and infrastructure for empowering the youth with marketable knowledge and skills Focus on adult literacy and lifelong learning Youth not continuing with education - NEET One of the biggest challenges to enrolment is the limited number of secondary schools. In the entire country, there are 1,452 secondary schools compared to -6,194 primary schools. Youth not continuing with education - NEET for the following reasons; early child marriage, inability to pay fees or transport costs, pregnancy, family responsibilities, long distance to schools and lack of teachers.

³¹ As of 2018. National Statistics Office, Govt of Malawi (2020). *Malawi in Figures*.

³² As of 2018. National Statistics Office, Govt of Malawi (2020). *Malawi in Figures*.

³³ The Malawi Growth and Development Strategy (MGDS) III - 2017-2022

³⁴ Census 2018

³⁵ Census 2018

³⁶ Census 2018

5.2 Profile of Institute covered for the study

To understand the gaps in the programs across the education and the skills sector with respect to digital learning, the study conducted a survey across the country covering 417 schools, 51 tertiary institutes and 25 vocational training institutes



Figure 39: Distribution of 417 samples schools covered during the study



Figure 40: Distribution of 51 tertiary institutes covered during the study



Figure 41: Distribution of 25 TVET institutes covered during the study

5.3 Key results - Assessment of digital learning in educational institutes in Malawi

The framework of assessment of the schools and institutes was based on the following key themes:

Table 5. Assessment	Framework for	Schools	and Institutes
1001C J. A33C3311CIII	i i unicwork i or	30110013	

Themes for assessment	Baseline questions
Infrastructure	Are there computers at your school/institute?
	Do you have internet facility at you school/institute?
	Are the computers connected to the internet?
	What is the internet bandwidth available at your
	school/institute?
Policy and Planning	In what standard computer lessons are introduced at school?
	Is computer a dedicated subject for the students?
	Is there an ICT coordinator at the school?
	Does your school/institute have an ICT strategy?
	Is your institute connected with technical hubs?
Pedagogy and Practice	Do the students/learners have access to computers and ICT
	facilities?
	What is the readiness of the staff to undertake ICT led
	sessions?
	Is the staff capacitated with ICT teaching pedagogy
	methods?

Infrastructure assessment

23% of the schools and 84% of the tertiary institutes had access to computers. While 17% schools had access to internet, 76% of the tertiary institutes had internet facilities

- Out of the 417 schools that were covered during the study, only 96 schools (23%) were reported to have computers at schools and 69 schools (17%) had internet connectivity.
- When the schools across various categories were assessed, a greater number of private schools, urban schools and secondary schools reported to have internet and computers at schools, and performed better than the government schools,



rural schools and the primary schools on these parameters. The low level of connectivity among reporting schools indicates that many children may be subjected to digital divides in access, potentially putting them at a disadvantage in developing digital skills.



Figure 43 Percentage of schools across categories with computer and internet facilities

- Out of the schools that reported to have computers, 56% of the schools had less than 10 computers at the premise
- Overall, only 17% of the schools had internet facility. However, it was also observed that only 45 schools (11%) were seen to have both computer and internet connections. Of these 45 schools with both internet and computer at the premises,
 - 72% were seen to be located in urban and semi urban areas, indicating better digital infrastructurel availability.
 - 66% were private schools
 - 68% were secondary schools

 297 schools
 □ × (**)×

 51 schools
 □ × (**)×

 24 school
 □ × (**)×

 45 schools
 □ × (**)×

Figure 44: Schools with computer and internet facilities

- When the schools were asked about the internet speed availability, many of the respondents did not have information about the bandwidth or internet speed. Out of the ones that did provide the information, 4G internet facilities were seen to be used by most schools.
- 47% of the schools also reported that none of their computers were connected to the internet, the primary reason being lack of access to internet at the school premises.
- More than 70% of the schools reported to not have any additional ICT training tools, other than computers, such as audio-visual presentation tools, whiteboards/LED boards, student data management systems, assistive technology for students with disabilities, school website etc.
- At the tertiary level, 84% of the institutes reported to have computer at their premises, while 76% of the institutes had internet facilities.



Figure 45 Tertiary institutes with computer and internet connection

 88% Govt tertiary institutes had	88% of the Private tertiary
computers	institutes had computers
 89% of the Urban tertiary institutes	74 % of the rural tertiary
had computers	institutes had computers
 100% of the Graduate, Postgraduate	58% of the Certificate institutes
and PhD. institutes had computers	and polytechnics had computers

- > 23 out of the 25 TVET institutes reported availability of computers/laptops at the centres
- The 25 TVET institutes that were a part of the study reported that they offered training to over 20,000 youth across 14 courses³⁷, ranging between 3 months and 48 months duration. The enrolment of students across the courses is represented below:

³⁷ Agribusiness, Business management and entrepreneurship (including marketing, venture capital training etc), Vocation training, Community development, Network design and interaction service, Monitoring and evaluation, Information computer technology, Computers 1, 2 and 3, Languages, Intelligence monitoring system, Initial primary teacher education, Bricklaying, Carpentry & Joinery, Diploma in Automotive Mechatronics



Figure 46: Percentage of the youth enrolled across vocational, certificate and diploma courses

Out of the courses that are being offered by the vocational centres, almost 11 centres offered courses with digital training components and more than 10% of these centres offering ICT related courses reported that they lacked basic ICT facilities like a computer, laptop and internet facilities.

Policy and Planning Assessment

Only 53% of the schools have formally introduced computer training to its students and only 70% of these schools have access to computers. 50% of the tertiary institutes covered offered courses with digital learning elements and almost 40% of these lacked access to internet and/or laptop

Out of the total 417 school covered under the study, following was observed with respect to introduction of computer-based learning at school level

Only 53% of the 417 schools (223) have introduced computer lessons for its students at various standards, as provided below. The dichotomy between government and private schools and rural and urban schools is visible, similar to trends shown with respect to availability of computers at school

49% of the Govt. schools	59 % of the private schools
60% of the rural schools	60 % of the urban schools
29% of the primary schools	72% of the secondary schools

Almost 70% of the schools that have introduced computer lessons do not have access to computers at schools, while 30% of the schools with computers also reported to not have introduced computer courses



Figure 47: Out of the 223 schools that have introduced computer courses, only 30% have computers at school

- Primary schools commonly introduced computer courses at standard 1 and standard 8, while secondary schools commonly introduced computer courses at Form 1 level
- With regards to integration of computer and tablets into the teaching curriculum, 80% of the schools reported that such ICT tools are not used for teaching
- Further, out of the schools with computers, only 53% of the schools had computers accessible to the students in libraries and computer labs. In the remaining schools, the computers were primarily found at staff rooms and meant for administrative uses only. At tertiary level, 51 institutes were covered which offered around 100 courses across various disciplines
- 23 institutes reported that the courses offered by their institutes includes courses with basic digital skills requirement. While 22 of these institutes had computers, 8 of these institutes lacked internet connectivity.
- Few courses (including diploma/certificate) such as accounting, MIS management, computer engineering, ICT in post-doctoral courses, post-graduation in computer networking and computer science, etc. were reported as requiring only basic digital skill level, in spite some of them being niche ICT related courses or courses that otherwise entail use of business software
- Only 5 institutes reported to be offering courses³⁸ involving advanced digital skills as a part of the curriculum

³⁸ Key courses with advanced digital skills - M.Sc. Information Systems and Ph.D. in Information Technology

Pedagogy and Practice Assessment

While, only 13% of the school staff was capacitated for undertaking ICT led teaching and had competencies to deliver lessons using digital platforms and computer applications, more than 90% tertiary institutes had capacitated their staff for delivering digital courses

- At the primary and secondary education level, 67 out of 417 schools reported to have a dedicated ICT coordinator, however, only 49 out of these 67 schools have introduced computer courses as a part of their curriculum
- Only 13% of the schools (58 schools) out the 417 schools reported that their staff had been capacitated for teaching ICT courses, with the following being the key themes for their training



Figure 48: Responses from 58 schools on teacher capacity building for ICT led teaching

The schools rated their teachers on a scale of 0-5 for their readiness and competency of undertaking e-learning lessons. The responses from the schools are as follows:

Competency themes	0	1	2	3	4	5
Knowledge and usage of computers	10%	60%	8%	10%	6%	5%
Knowledge of audio video devices	11%	56%	10%	12%	6%	4%
Usage of internet	12%	54%	9%	12%	7%	5%
Creating presentations and basic digital content	15%	59%	7%	11%	5%	4%

Table 6: Competency themes for shcools

Teachers do not have prior experience on	14%	58%	10%	10%	5%	4%
the above						

- Further 148 schools reported that their ICT courses are prepared by the teachers. However, 80% of these 148 schools reported that their teachers have not gone through any capacity building training for imparting or developing ICT skills and training. Schools also engaged external vendors or used standard curriculum for development of ICT teaching material
- At the tertiary level, 93% of the institutes (47) reported to have provided capacity building training to their staff for undertaking ICT based teaching.



Figure 49: Responses from 47 tertiary institutes on teacher capacity building for ICT led teaching

- On comparing the thematic areas of focus for staff capacity building across the primary, secondary and tertiary education institutes, the focus is on basic skills and equipment management for the secondary and primary school staff while the staff at tertiary institutes is being trained for more advanced skills and platforms
- When the tertiary institutes were asked to rate their staff for competency and readiness to be imparting training for the courses with digital training components the following results were obtained, that indicated high competency levels as compared to the counterparts from primary and secondary schools

Competency themes	1	2	3	4	5
Knowledge and usage of computers	23%	9%	11%	36%	30%
Knowledge of audio video devices	21%	9%	21%	28%	30%
Usage of internet	21%	9%	13%	40%	26%
Creating presentations and basic digital content	21%	9%	13%	43%	23%

Table 7: Competency themes for tertiary Institutes

Teachers do not have prior experience on the above	30%	13%	4%	45%	17%
----------------------------------------------------	-----	-----	----	-----	-----

Introduction of ICT in education, is a concept developed in high income and technologically and economically evolved contexts, thus poses some challenges when introduced in lesser developed nations. The challenges can be primarily categorised as material (computers, instruction material, internet and others) and non-material (lack of ICT knowledge and skills of teachers, lack of awareness of relating ICT with pedagogy and others)



Figure 50 Key challenges faced by schools and colleges for introduction of ICT learning

- Out of the 417 schools covered in the study, the lack of adequate number of teachers/staff/instructors for ICT courses at school level, was the key challenge reported regarding ICT in schools.
 - It was noticed that, more than 1/3rd of the schools that had computers, had not introduced computers or ICT related classes and over 92% of these schools sited lack of trainer/teacher/instructional material as the key challenge reason for not being able to formally introduce ICT education in spite of having computers and internet at school

- Over 56% of the schools had only 1-10 computers at the premise, of which 68% of the schools had only 5 or less computers at the premises, which primarily were utilized for administrative purposes. Infrastructural inadequacies due to lack of computers/ or their being out of order and needing repairs was identified as one of the key challenges by the schools. ICT lessons are best provided in an experiential teaching mode, and the lack of computers thus impedes the full realization of benefits of ICT learnings
- At the tertiary level, infrastructural inadequacies pertaining to availability of computers was identified as the key challenge across colleges (81% colleges) impeding the integration of ICT at the institutes
- Apart from computers and internet, to provide a quality ICT experience to the students, other infrastructural facilities such as audio video aides, LED/interactive screens, etc is also a necessity
 - 72% of the schools did not have access to any of the ICT tools, 10% of the schools had access to facilities such as a presentation screen and speakers and 6% of the schools had a student data management system and a school website
 - While more than 80% of the colleges had access to ICT tools such as speakers, presentation screen and digital content.
- 59% of the colleges covered under the study were offering courses with basic, intermediate or high level of digital skills and 35% of these colleges did not have any ICT tools to assist the integration of digital skills learning at tertiary level
- Malawi's higher education enrolment data indicates a low uptake of ICT courses. Only 1% of the entire cohort at higher education institutes was enrolled in ICT³⁹

5.4 Key results - Assessment of TVET ecosystem for digital skills in Malawi

The 25 TVET institutes that were a part of the study reported that they offered training to over 20,000 youth across 14 courses40, ranging between 3 months and 48 months duration. C. 24% of the institutes were offering courses that were aligned to frameworks development of innovation and technology hubs that they were associated with

³⁹ Accessed from <u>HEMIS Website (nche.ac.mw)</u> on 15 August 2021

⁴⁰ Agribusiness, Business management and entrepreneurship (including marketing, venture capital training etc), Vocation training, Community development, Network design and interaction service, Monitoring and evaluation, Information computer technology, Computers 1, 2 and 3, Languages, Intelligence monitoring system, Initial primary teacher education, Bricklaying, Carpentry & Joinery, Diploma in Automotive Mechatronics





Figure 51 Percentage of the youth enrolled across vocational, certificate and diploma courses

Popular digital courses chosen by the trainees for TVET training are (% enrolment out of total enrolment in digital courses)

Course name	% enrolment (out of total enrolments in digital courses)
Technology and commercialization solutions	22%
Business management and entrepreneurship	17%
Vocational training	14%
Community development	9%
Network design and interaction service	9%
Computers 1, 2 and 3 (level)	9%
Monitoring and evaluation	7%
Information computer technology	6%
Intelligence monitoring system	4%
Carpentry & Joinery	1%

Availability of ICT tools: 92% TVET institutes covered under the study reported that there are computers/laptops available at the centres/institutes. However, other ICT tools such as internet access, digital training content, virtual learning platforms, and audio-video aides were found to be available at only 76-84% of the institutes. Advanced ICT tools such as cloud/web-based storage and interactive touchscreens was only available at 40-52% of the institutes.

- Qualification of trainers: Most common response for minimum qualification of trainers across the TVET institutes for digital courses, including advanced courses were found to be Malawi School Certificate of Education. 39%, 44%, 28% of the TVET institutes offering basic, intermediate and advanced courses respectively reported graduation as the minimum education qualification for its trainers. Special certification was observed to be preferred by 33% of the Institutes offering advanced courses. Further over 50% of the institutes also reported that their digital training courses was prepared by an internal team of trainers and the remaining 50% engaged third party content creators for developing the curriculum and course for the digital courses in their institutes
- Challenges during mobilization of youth for digital skilling courses: Since the country is at a very initial stage in its technological development, the population at large had limited information about what digital jobs are and how digital skills can be beneficial to the youth. This necessitates extensive focus on advocacy to create awareness and raise the aspiration for digital skills, 61% of the TVET institutes while mobilizing candidates for the digital courses highlighted that there were not enough funds to carry out extensive mobilization and outreach campaigns. 25% of the TVET institutes reported that lack of information about the jobs in the digital sector is a challenge in attracting more candidates. 22% of the TVET institutes reported about lack of quality ICT tools are a challenge faced by them while delivering digital training.



Figure 52 Challenges faced by TVET institutes while mobilisation of candidates for digital training course



Figure 53 Minimum education qualification of trainers across for basic, intermediate and advanced digital courses in Malawi

- Given country's ongoing digital transformation, it is imperative that the digital courses and trainings are in line with the dynamic industry demands, however, the study reported that 45% of the institutes reported that their digital courses have not yet been updated, while the remaining institutes have updated theirs at least once
- 75% of institutes offering digital courses involved subject matter experts and industry members for development of skilling courses

5.5 Fostering digital skills in competency in Malawi

Assessment of Malawi's education and skills ecosystem threw light on critical areas that need to strengthen to harness the digital potential of the country by building digital skills and knowledge in the country. The key stakeholders asked for their recommendations and suggestions in this regard

Table 8 : Summary of key challenges and recommendations

Key challenges for digital skills and education in Malawi	Key recommendations from stakeholders (school/college/TVET functionaries and NGOs and other international organizations)
▶ More than 90% of the schools have	Availability of computers and other ICT
infrastructural inadequacies that are	tools through Government
imperative for integrating ICT in	support/funding
education. Without basic facilities such as	
computers and internet at schools, the	
quality of ICT education will be impacted	
adversely	
High input costs for ICT infrastructure	Technology and allied services and
	product agencies to be supported and
	encouraged through incentives
	Affordable data rates to training
	providers and schools to allow access to
	e-learning platforms
The digital ecosystem assessment for the	Making computer learning a compulsory
Malawian population indicates that only	subject/ introducing technology courses
44% of the population have foundational	in education system from primary levels
skill level competency	
Noticed for more than 90% of the primary	
schools, computer courses are not	

-

a

Key challenges for digital skills and education in Malawi	Key recommendations from stakeholders (school/college/TVET functionaries and NGOs and other international organizations)
Lack of trainers with adequate ICT skills,	Training of teachers and trainers on ICT
knowledge and competency	led pedagogy and instruction methods
► There is little digital education content	
based on the local curriculum frameworks	
available in Malawi's education	
institutions.	
Lack of aspiration for digital skills to	Awareness and sensitization on the
engage in ICT led jobs	importance of building a digital society
Digital skills not a primary objective at	
education institutes	
Limited connect with industry members	Support tech hubs with opportunities for
and ecosystem enablers	financing, capacity building and
	certification of trainings
Need to strengthen ecosystem enablers	Integrate efforts for providing digital
to ensure inclusion of disadvantaged	learning platforms for the people with
groups in digital competency building	disabilities
	Blended training, mobile training
	institutes to enable training of youth in
	distant regions
Most of the skilling courses are self-paid	Leverage public funds for more large-
courses impeding maximum participation	scale digital training and skilling
of youth	programs
	Relaxed entry requirements for basic
	digital training

-

Key challenges for digital skills and education in Malawi	Key recommendations from stakeholders (school/college/TVET functionaries and NGOs and other international organizations)
More than 90% of the schools have	Availability of computers and other ICT
infrastructural inadequacies that are	tools through Government
imperative for integrating ICT in	support/funding
education. Without basic facilities such as	
computers and internet at schools, the	
quality of ICT education will be impacted	
adversely	
High input costs for ICT infrastructure	 Technology and allied services and product agencies to be supported and encouraged through incentives Affordable data rates to training providers and schools to allow access to e-learning platforms
The digital ecosystem assessment for the Malawian population indicates that only 44% of the population have foundational skill level competency	Making computer learning a compulsory subject/ introducing technology courses in education system from primary levels
Noticed for more than 90% of the primary	
schools, computer courses are not	
mandatory	
Lack of trainers with adequate ICT skills,	Training of teachers and trainers on ICT
knowledge and competency	led pedagogy and instruction methods
There is little digital education content	
based on the local curriculum frameworks	

Key challenges for digital skills and education in Malawi	Key recommendations from stakeholders (school/college/TVET functionaries and NGOs and other international organizations)
available in Malawi's education	
institutions.	
► Lack of aspiration for digital skills to	Awareness and sensitization on the
engage in ICT led jobs	importance of building a digital society
Digital skills not a primary objective at	The Ministry of education to introduce
education institutes	mandatory digital skills subjects in
	primary and secondary schools
Limited connect with industry members	Support tech hubs with opportunities for
and ecosystem enablers	financing, capacity building and
	certification of trainings
	Create partnerships with industry
	members
Nood to strongthon occession anablars	Intograto offerts for providing digital
to ensure inclusion of disadvantaged	learning platforms for the people with
groups in digital competency building	disabilities
	Blended training, mobile training
	institutes to enable training of youth in
	distant regions
	Relaxed entry requirements for basic
	digital training

The education and training ecosystem in Malawi need to be updated to suit technology transformation that the country is going through and increasing the pace and scale of ICT introduction to mainstream educations is imperative to address the upcoming technological shifts. The education and training policy makers have to concert the planning and strategy to ensure that digital skills are integrated at the foundational phases of learning and continues

through higher education. However, to attain the same, the supply side constraints - both materials non material- need to be identified and relevant strategies to be drawn out to address the same.

Some key programs and initiatives in Malawi that are driving the efforts towards empowering the younger population of the country with digital skills and competencies through focus on 3 pillars – Infrastructure, Policy and Planning and Pedagogy and Practice

Malawi's 2014-2031 National ICT plan aims to create ICT led opportunities in Malawi by empowering the citizens with opportunities to harness their digital competencies and access the industry employment avenues for technology led jobs. Under the national ICT plan, various indicators have been developed to assess the integration of ICT across schools and TVET institutes

- Some of the key outcomes described in the plan for schools are as follows:
 - Computer laboratory in all secondary schools
 - Computer instructions in all teacher training schools
 - > Digitize, curriculum, school textbooks and materials for use at all levels of education
- Specific targets under the plan
 - Formulate guidelines and standards for the provision of ICT education in Malawi by 2015
 - 50% of the schools to have computers by 2019
 - > Promote the acquisition of computer equipment by educational
 - 100% of the teachers to be trained by 2020 on ICTs in education to create a pool of ICT literate teachers
 - New e-learning content to be developed for schools by 2021
 - Building e-learning /m-learning awareness messages through the development of content material for media broadcast by 2021
 - Improved education management system by 2016
 - Yearly curriculum reviews to be conducted by 2017 for enhancing the national computer curriculum for secondary Schools/institutions
 - > 50% of the educational curriculum, materials, and textbooks to be digitized by 2016
 - Special Needs ICT in Education Programs and Initiatives
 - Program to Improve the ICT Human Resource Development Capacity of the University of Malawi, Livingstonia, Mzuzu University, the National Institute NACIT), Other Institutions of Higher Learning
 - Create and ICT Skills Reference Portal and career progression grid

An Initiative to Include ICT training in TEVETA Training Programs

Technical, Entrepreneurial and Vocational Education and Training Authority's strategic plan for 2018-2023 has also identified several targets and programs to integrate ICT into skilling and training ecosystem of Malawi

- Develop and implement TEVET Management Information System
- Procurement of ICT Software and Licenses
- Digitization of TEVETA Documents
- Management and Maintenance of Wide Area Network (WAN) and Information, Communication and Technology (ICT) systems in TEVETA
- Enhance innovation and adoption of appropriate technologies in TEVET
 - > Conduct research on sustainable new appropriate technologies
 - Facilitate appropriate technology development and link with institutions for further development
 - Facilitate development of innovation forums i.e. where innovators would meet potential sponsors
 - Incentivize and award innovations from the TEVET sector
 - > Facilitate technology dissemination seminars from industry to TEVET provider

Digital Foundations projects under Digital Malawi Program- Phase 1 aims to address affordability, access and availability of digital technologies and services in Malawi, including those at schools and colleges for increasing ICT led training and education

- Support high-speed connectivity for priority public institutions throughout the country, including government offices, public services centers ('one stop shops'), primary and secondary schools, and health centers
- Improving connectivity for higher education institutions is critical to empower the next generation of digital leaders for government and private sector
- support high speed connectivity and access to online academic content for higher education institutions through the Malawi Research and Education Network (MAREN

Malawi Education Sector Improvement Project (MESIP) (2017) - Connectivity for schools will enable use of e-learning tools and access to digital curriculum/digital content. Digital platforms can enable digital teacher salary payments and tracking of attendance.

Malawi Skills Development Project (SDP) (2014) - academia-industry partnerships for digital skills development, innovation and entrepreneurship will complement the efforts under SDP to

improve IT related curriculum/programs. Connectivity for higher education institutions will empower the SDP sponsored programs which suffer from insufficient connectivity

Computers for African Schools Malawi (CFAS) program administered by British Council and SchoolNet Malawi supplies computers to the whole country. After the schools are provided with the computers, they have to ensure its proper upkeep and maintenance. Each school received 10 to 15 computers and a printer. The program also facilitated training of the teachers in ICTs by the British Council, and UK trainers who travelled to Malawi for the capacity building programs





Demand of Digital Skills in Malawi

6 Demand of Digital Skills in Malawi

Malawi initiated a long-term planning cycle since the conclusion of 'Vision 2020'. The vision and development aspirations of Malawian citizens is expressed by Malawi 2063 (MW 2063). By 2063, Malawi aspires to become an inclusive industrialized upper-middle income country. The impact of emerging technologies on the manufacturing value chain has led to substitution of many labor-intensive processes by automation. This has also contributed to significant de-industrialization among the developing economies since the 1990s as the value chain shifts to the developed economies.

A digital first approach is key to driving exponential growth leveraging digital transformation across all sectors of the economy. The learnings from Israel's model of water management can be explored from a Malawian context to improve agricultural productivity. Be it Work/Study from Home, diagnostic and preventive healthcare at home or use of 3-D printing, technology has a key role to play in solving many of the country's problems.

An Overview

Total No of Respondents from Industries	712
Central Region	200
Northern Region	143
Southern Region	369

A data collection survey was performed across Malawi to perform an assessment of the ecosystem and demand of digital skills. A total of 712 industries and entrepreneurs were interviewed along with the representatives from 22 ministries.

The survey made an attempt to capture the existing digital landscape, the labor market ecosystem and the system integrators in action.

Total No of Respondents from Ministries and Departments	22
Ministry of Education	Ministry of Natural Resources and Energy
Ministry of Labor	Ministry of Industry
Ministry of Transport and Public Works	Ministry of Trade

Table 10: Sampling for Survey of Ministries and Departments

NCHE	Ministry of Agriculture and Food Security
Ministry of Health	Ministry of Irrigation and Water
	Development
Ministry of Foreign Affairs and International	Ministry of Economic Planning and
Cooperation	Development
Ministry of Finance	Ministry of Gender and Child Development
Ministry of Defense	Ministry of Local Government and Rural
	Development
Ministry of Home Affairs	Ministry of Youth Development and Sports
Office of the President and Cabinet	Ministry of Land, Housing and Urban
	Development
Ministry of Mining	Ministry of Information

A comprehensive survey with more than 700 companies in Malawi revealed some interesting insights. The data collection and primary survey witnessed healthy participation from across sectors. The top sectors by size of representation in this survey are Telecommunication/ICT, Agriculture and Business, Consulting and Management. Almost one-fourth representation came from businesses which classified themselves in the services sector.

The Office of Registrar General reports that the number of registered businesses in Malawi has increased from 181,683 (2014) to 236,193 (2020). The number of registered companies among these has grown from 19,012 in 2014 to 23,560 in 2020.

Malawi has undergone a transition towards privatization, and this is reflected in the organizational structure of respondents. Among the participating companies, only two classified themselves as Public Sector Undertakings/Enterprises (PSU) against 204 respondent firms who listed as Private Sector and 114 entrepreneurs.

Break-up of Industry Respondents by Sector and Size of the Organization



Figure 54: Respondent Organizations by Size



Figure 55: Respondent Organizations by Size

Among the respondents, 340 organizations listed themselves Small and Medium Enterprises (SMEs). Another 38 companies listed as micro-organizations.

There are disparities that exist in access to internet by the size of the enterprises. While about 70% enterprises in Malawi had access to internet in their premises, only 45% small-scale enterprises had access to internet compared to 87% large-scale enterprises.



Distribution of Respondents across Industries (in %)

Figure 56: Distribution of Respondents across Industries Source: Primary Data Survey

Almost one in four companies in Malawi belong to the Agriculture (14%) or the Food (10%) Industry. Retail (13%), ICT (10%) and Printing & Publishing (10%) are other large industries. The employment has grown at a steady pace since 2015 at 5% p.a. As of 2020, the respondent industries employ more than 34,000 Malawians. The Malawi Census (2018) data estimates

almost 5.4 million Malawians employed. The core business activities include selling something as procured or add value to it before selling. Some even create or grow something before selling predominantly in the agriculture sector.

Core Business Activities in Malawi



Figure 57: Core Business Activities of Malawians as per Census report, 2018 Source: Primary Survey

While the census reports a male to female employment ratio of close to 1, the respondent companies participating in this survey employed 2 males for every female. Less than 2% of the workforce constituted of the Persons with Disabilities (PWDs). It raises the concern that a significant number of Malawians from the disadvantaged groups are likely to be vulnerable and engaged in informal employment.

Table 11: One of the Questions asked to Ministries during the Stakeholder Consultations

Do your policy and programs aim to achieve inclusiveness for females, lower socio-economic and other disadvantaged groups?	Count
Yes	6
Not yet	12
Not sure	4

Among the 22 ministries which participated in the study, only 6 had drafted policies and programs with an aim to promote inclusivity of disadvantaged groups.

Four of these ministries encourage women participation by giving them more opportunities while two ministries make a conscious effort of increasing female participation in official positions. There are initiatives to engage women by promoting flexible work arrangements, offering paid maternity leaves and free computers, and even encouraging them to train in relevant trades.

The low Impact of Digital Initiatives are hurting the Business Sentiments in Malawi

Malawi is a young nation striving to find its feet in a rapidly evolving global digital economy. The lack of internet, digital infrastructure and digital skills in citizens is a great barrier in attaining economic growth for the country. The companies participating in the survey reveal a relatively low level of usage of digital/ICT tools in organizations across Malawi. Only 18% organizations reported a high usage of ICT tools. The same trend is demonstrated across three provinces. The companies in the Northern region do better with 47% respondents reporting medium usage of digital/ICT tools.

The sectoral contribution of ICT to GDP is very low at 4%⁴¹. The National ICT Master plan aims to stimulate industrial growth and e-businesses in a phased manner.



Level of Usage of Digital/ICT tools in Organizations across Malawi

Figure 58: Level of ICT Usage in Malawi

⁴¹ As per the Malawi National ICT Master Plan 2014-31 document.



Figure 59: Level of ICT Usage across regions

While the overall level of usage of digital/ICT tools is on the lower side, there is a glaring disparity in the usage across different sectors and size of organizations.

Overall, 70.2 percent of the enterprises had internet in their premises. About 87 percent of large scale enterprises, 69.2 percent of medium scale enterprises and 45.1 percent of small scale enterprises had internet in their premises⁴².

The data from National Statistical Office indicate that the usage if ICT tools was higher in private sector enterprises than public sector enterprises. Overall, use of cloud computing in Public institutions was about 15 percent while

The use of IoT devices was at 5.7 percent. Compare that to private sector where 15.3 percent of the enterprises used cloud computing and 13.3 percent of the enterprises used IoT devices.

Level of Usage of Digital/ICT Tools across Sectors

⁴² National Statistical Office



Figure 60: Level of ICT Usage by Sectors Source: Primary Survey

The transformation in the health sector has come into focus after the whole world was hit by coronavirus in 2020. The level of usage of digital/ICT tools is high in only 3% of the respondent organizations in the health sector. The importance of emerging technologies and data to deliver 'at your home' healthcare products and services has never been greater.

The Ministry of Finance, Ministry of Industry and Ministry of Economic Planning and Development expressed during the stakeholder interviews that promoting digital transactions, e-governance and greater use of Technology are some of their key focus areas while making policies. Currently, about 25% enterprises are using mobile banking platforms⁴³.

In an era driven by rapid technological advancements and the globalization of consumption economy, the response from Malawi calls for strengthening the foundations of its digital economy. Only one in four business owners (23%) feel that Business innovation will have a high impact on businesses in Malawi by 2025. A higher focus on promoting innovation in Universities and through Incubation hubs will help foster the market linkages for young startups and build confidence. Incentivizing higher spend on R&D for established businesses will also help promoters adopt an 'innovation-first' approach.

⁴³ National Enterprise ICT Survey, 2019



Figure 61: Perceived Impact of Global megatrends in Malawi Source: Primary Survey

However, the primary research with industries in Malawi reveals a very pessimist view on the potential of impact created by some of the biggest global megatrends.

With a significant population across the globe working remotely since 2020 amidst the pandemic, the rise of gig-economy has emerged as a prominent theme. Services sector especially BPO/KPO, freelancing present avenues to align youth with the relevant digital skills to employment opportunities.

To many a surprise, the organizations expressed concerns about overseas placement opportunities for Malawian population. Almost 39% of the respondents feel the global opportunities will have a low impact in providing employment for Malawian youth.

Industries also feel less confident about supply chain optimization and emergence of a connected economy which indicates an urgent need to prepare the country for Industry 4.0 revolution.

"I am a graphic design freelancer. But it is not easy being an entrepreneur in digital space in Malawi. The bids on platforms like Fiverr are won by competitors from Asia quoting less than half of our hourly rates. It is not feasible for us to even invest in our upskilling through digital courses because of the high data charges." - A freelancer in one of the Focus Groups This problem becomes especially severe in case of Malawi since opportunities are limited and whatever opportunities in the gig economy do exist, are taken by competitors from other countries. The disparity between internet charges among different countries plays a strong factor and Malawian population with one of the highest internet charges stands most disadvantaged. This is in stark contrast to the rise of gig economy across the world.

The survey data reveals that an overwhelming 73% of the respondent organizations do not employ the services of independent/online freelancers. As of 2020, the 712 respondent organizations only employ the services of 557 online freelancers. Their demand by these organizations is going to increase by 120% in the next 5 years.



Figure 62: The Global Megatrends trying to find balance in Malawi

The industries (38% respondents) also feel that the impact of the respective IT infrastructure on their businesses will be low.



Figure 63: Ministries list the use Activities which use ICT Source: Primary Survey

The response from ministries on use of technology in various activities gives an idea about the challenges the Digital Malawi Program will need to overcome. The technology usage in Ministries in Malawi is restricted to use of computers in online/offline documentation purpose. The use of technology is limited except for use of advanced technology in Information Management Systems. Promoting e-governance with citizens which is one of the focus areas of ministries is leveraged by only one-third of the ministries.

Every Ministry has initiated some sort of training initiative to build the foundational and intermediate level of digital skills to tackle the above challenges. The Digital Malawi Program's intended outcome of increasing adoption of e-governance aims to address this. The problem of ICT utilization is hampering the growth of a digital economy.

The survey data reveal that among respondent organizations more than half (58%) make less than 20% of their revenue from the digital businesses in their portfolio. Only 8% organizations make more than 40% revenues with a digital first approach.

A glance at the corresponding data of percentage of companies allocating share of revenues to digital initiatives bring out an interesting contrast.



Percentage Share of Revenues vs Allocation into Digital Initiatives by Companies in Malawi

Figure 64: Share of Revenues from Digital Business and the Allocation of Revenues to Digital Initiatives Source: Primary Survey

Almost half of the companies (49%) allocate more than 40% of their revenues to budget of digital initiatives. Basically, they are increasingly allocating higher share of revenues to digital initiatives but not reaping enough dividends.

One key reason behind this is lack of cybersecurity and perceived threats from cyber-crimes like phishing. Majority of the respondent companies (51%) had capabilities to defend less than one-fourth of their organizational infrastructure against cybercrimes. Even the data from National Enterprise ICT Survey 2019 reveal that 23.2 percent of enterprises had in place an ICT security policy. Among the large scale enterprises, 39.2 percent had an ICT Security Policy in place followed by medium scale enterprises at 17.9 percent and 8.0 percent for small scale enterprises.

The Jobs and Skills that will Thrive in Digital Malawi

The companies listed out the top 10 ICT tools which are expected to grow the most in utilization till 2025. It was observed that the investments in enhancing ICT usage was made ineffectively by companies. Those who did invest in ICT, were using it for basic purposes like having a company website, or its own email domain.

No of Companies list the Top 10 Fastest Growing Utilization of ICT Tools in 2020 vs 2025 Table 12: Primary Research through Stakeholder Consultations

Utilization of ICT Tools	2020	2025	Growth in Utilization
Company website	173	441	155%
Internal employee portals	82	176	115%
Enterprise Resource Planning software	53	113	113%

Page **100** of **145**

Utilization of ICT Tools	2020	2025	Growth in Utilization
App- and web-enabled markets	14	58	314%
Machine learning (includes 3D printing)	27	52	93%
Cloud computing	19	50	163%
Augmented and virtual reality	5	12	140%
Quantum computing	2	5	150%
Biotechnology	7	15	114%
ITIL Process	3	9	200%

The use of desktops and laptops was the highest utilization of ICT with 61% companies reporting their employees using one of the above. But the companies feel the growth in usage of computers across organizations is expected to remain stagnant over the next 5 years.

Inventory Control systems, Digital trade, maintaining digital data repository and remotely connected servers were some of the other high utilizations of ICT tools. However, they did not feature among the fastest growing utilizations of digital/ICT tools.

The utilization of emerging technologies like Machine Learning, Cloud Computing, AR/VR among others were expected to find increased adoption and grow among the fastest owing to their presence in a small nice with a very small base. As of current scenario, 15.3 percent of the enterprises used cloud computing while 13.3 percent of the enterprises used IoT devices. Only 15.2% enterprises used any specialized applications.

The confidence shown by respondents in the explosive growth of app and web-enabled markets is promising to the growth of e-commerce and digital transactions. The growth of users on social platforms is also indicative of changing consumer behavior. Currently, only 33.0 percent of the enterprises engaged in e-commerce activities. Large scale enterprises had the largest proportion of e-commerce uptake at 42.7 percent followed by medium scale enterprises at 30.7 percent and small scale enterprises at 21.8 percent⁴⁴.

The success of e-commerce in Malawi will depend on the ability of platforms to be able to provide stable and secure transactions. Efforts to build transacting skills among population and at the same time advanced skills in app development and cybersecurity will shape the growth of e-commerce in the country.

⁴⁴ National Enterprise ICT Survey 2019

Job Roles that will find Demand in Digital Malawi

The COVID-19 pandemic has brought clouds of uncertainty in the labor market in Malawi. It is reflected in the fact that almost 70% of the respondent organizations could not give a definitive answer about their hiring plans. They were cautious and concerned about the impact of recurrence of multiple pandemic waves on demand in the market.

The other respondent organizations listed out their hiring plans which adds up to 4500+ in the coming future.

Some of the digital job roles to emerge to cater this demand are listed below:

- a) App and Cyber security Specialists
- b) Web and App (Software) Developer
- c) IT/ICT Managers
- d) Accountant (Proficiency in digital tools)
- e) Digital Marketer
- f) Animation and Graphic Designer
- g) ERP Specialists
- h) Cloud Computing Specialist
- i) Data Analytics (Data Entry Operator)
- j) Digital Typists

These were some of the top jobs roles that are expected growth towards Malawi becoming a stronger digital economy.

Companies list Percentage of Jobs requiring Top skills in 2020 vs 2025

In this section we will uncover some insights from the data survey with regards to skills for the jobs of present and future. The table above lists out some of the tops skills listed by companies for the jobs at present (2020) and the skills that will find demand in labor market of future (2025). The respondents were asked to estimate what percentage of jobs they thought would require some of the top identified skillset.

Ton Skills	No of Companies list Percentage of Jobs requiring skills in 2020				No of Companies list Percentage of Jobs requiring skills in 2025			
	0-25%	25-50%	50-75%	>75%	0-25%	25-50%	50-75%	>75%
Cognitive abilities	47%	22%	27%	5%	38%	5%	29%	29%
Physical abilities	43%	17%	31%	8%	37%	6%	27%	30%
Content skills	44%	18%	32%	6%	38%	5%	27%	31%

Table 13: Primary Research from Data Survey

Top Skills	No of Companies list Percentage of Jobs requiring skills in 2020				No of Companies list Percentage of Jobs requiring skills in 2025			
	0-25%	25-50%	50-75%	>75%	0-25%	25-50%	50-75%	>75%
Process skills	42%	19%	32%	7%	37%	3%	26%	33%
Complex problem- solving skills	43%	18%	33%	6%	37%	4%	23%	36%
Resource management skills	41%	18%	33%	9%	35%	5%	25%	35%
Social skills	41%	18%	32%	9%	37%	3%	26%	34%
Systems Thinking	43%	18%	32%	8%	39%	3%	22%	36%
Digital skills	42%	18%	30%	9%	35%	2%	25%	38%
Environmental conscious thinking	44%	17%	30%	9%	38%	4%	26%	32%

Digital skills emerged as the top skill which the companies thought will find most increase in demand. Cognitive abilities, complex problem solving and social were among some of the other top skills to find increasing demand in future.

It was observed that the percentage of companies which believed that half of the jobs would require digital skills increases from 39% in 2020 to 63% in 2025.

How the Companies in Malawi Hire their Digital Workforce

Where do you source your digital workforce from?	High	Mid	Low	Weighted Score
Intensive internal requalification program	14%	29%	57%	41%
Employees leased from the contract labor agencies	9%	30%	61%	27%
Local colleges and universities	14%	29%	57%	41%
Reputed national institutes	18%	45%	37%	54%
Reputed international institutes	13%	33%	54%	40%
Online workers	11%	25%	64%	32%
Unemployed from labor offices	10%	25%	65%	29%

Table 14: A Question to Industry Respondents in the Data Survey

Transferring people from other regions of your organization	10%	29%	61%	31%
Employees leased from abroad from contract labor agencies	14%	28%	58%	41%
Online Portals	8%	27%	66%	24%
Referrals	9%	25%	65%	28%

The companies in Malawi seek to address the rising demand of digital skills by sourcing talent resources through multiple channels. The top 5 channels of sourcing digital skills were identified against a weighted score as follows:

- a) Reputed national institutes
- b) Local colleges and universities
- c) Intensive internal requalification program
- d) Employees leased from abroad from contract labor agencies
- e) Reputed international institutes

To summarize there was a strong conviction from employers in hiring for digital skills from academia of repute from different geographies. They also took initiatives to upgrade the skills of its existing workforce through intensive 'Reskilling programs'. Where the requirements for specific digital skills were not fulfilled, they collaborated with contract labor agencies in hiring talent from abroad.

The Skill Training Initiatives in Malawi need to catch up with the Rising Demand of Digital Skills in its Workforce

The outcome and satisfaction from employers have been far from satisfactory. It has been difficult for the companies to ignore the issues around quality and availability of a digital workforce. More than half of the companies (54%) said that it was a major issue to find quality workforce with the required digital skills in ICT intensive works. Only 37% of the respondents did not find an issue with the quality or the availability of the digital workforce.

Issues of Quality and Availability of a Digital Workforce and Initiatives taken by Companies to Address them



Figure 65: Quality and Availability of Digital Workforce Source: Primary Survey



Figure 66: Initiatives taken by respondents to address the lack of Quality and Availability of Digital Workforce Source: Primary Survey



Frequency of Skilling Activities for Employees in Digital Competences by Organizations

Figure 67: The frequency of reskilling activities by Companies Source: Primary Survey

The skill development of its employees needs to be an integral part of employee engagement policy of a company. However, when it comes to reskilling the employees in digital jobs, one-third of the respondent organizations do not plan for any skilling activities.

Another 29% organizations do not integrate skill development activities in their calendar and conduct training as and when needed. While it is encouraging to see 6% organizations plan skill training activities every month and another 12% conduct trainings every 3 months.



Skill Training Initiatives and their Levels by Ministries and the Employee Feedback

Figure 68: Level of Trainings provided by Ministries and Employee Feedback Source: Primary Survey

The ministries are also trying to tap the skill potential of its population of the 22 ministries interviewed, 20 are running training programs in digital competences. Almost two-third (64%) of the ministries are providing computer lessons. This is aimed to increase the employee's proficiency with digital devices at workplace. Currently only 21.5% employees across enterprises were using computers routinely for work⁴⁵.

About 45% of the Ministries report that they felt that there was need for more training as the employee satisfaction from these initiatives was high. Close to 70% employees who participated in these training initiatives found them useful. A significant number of these trainings were employment-oriented to prepare the workforce with the digital skills required to perform their tasks effectively.

⁴⁵ National Enterprise ICT Survey, 2019
Conclusion: Gap Assessment

7

7 Conclusion – Gap Assessment

ICT Development indicators in Malawi

Malawi is an LDC country which still lags behind in several developmental indicators vital for the Fourth Industrial Revolution, particularly in infrastructure availability, technology accessibility, and technical and vocational education and training.

Key Performance ICT Indicators in Malawi:

#	Indicators	Target	2020	2021*
1	Voice Telephony Penetration raised (%)	75	54	60
2	Internet Penetration increased (%)	25	37	40
3	Ratio of Postal and Courier Penetration	1:40,000	1:54,264	1:50,000
4	Electronic Commerce Penetration increased (%)	55	NA	NA
5	Level of regulatory compliance raised(%)	100	>90	>95
6	ICT contribution to GDP increased (%)	-	4.8	5
7	Proportion of individuals who own a mobile telephone (%)1	39	43.2	-
8	Proportion of population covered by a mobile network (2G) (%)	99	83	-
9	Proportion of population covered by a mobile network (3G) (%)	60	82	-
10	Proportion of population covered by a mobile network (4G) (%)	45	65	-
11	Fixed Internet Broadband subscriptions (Internet users per 100 people) (%)	0.001	<0.001	>0.001
12	Proportion of individuals using the internet (%)	12	40	37
13	Retail Price of Prepaid Mobile Broadband Monthly bundle 500MB (USD) Data Volume (USD)	3.50	2.70	-
14	ICT development Index	167	Not yet available	-
15	Number of licensed TV broadcaster	40	60	-

#	Indicators	Target	2020	2021*
16	Number of licensed Radio broadcaster	22	53	-
17	Number of Telecentres/Public internet/Information Access Centres	-	137	-
18	Number of licensed ISPs	-	42	-
19	Number of active ISPs	-	19	-
20	Number of post Offices converted into One Stop Public Service Delivery Centres	2	2	-

Source: (*Projected by MACRA) Annual Economic Report 2021, Government of Malawi

Technology has been an accelerating change driver since the past two decades and shall radically alter the consumption pattern, productivity and job roles in the near future. With all transformational changes, significant challenge comes along with great opportunities.

Skill Gap

In an estimated 17.5 million people in Malawi, half of the population, still have no access to the Internet, with the situation varying greatly between regions, income groups and among ruralurban divide.

- Low basic literacy including high early dropouts coupled with very low digital competencies are a key barrier to the greater benefit of ICTs by Malawian population and increased uptake of digital technology by the private sector. This is hindering Malawi's participation in the digital economy and constraining the ability of its citizens and businesses to access digital services. To address this, a total of 138 Complementary Basic Education (CBE) learning centres have been established in communities with high dropout rates, thereby giving an opportunity to youths to acquire basic numeracy, literacy and livelihood skills including digital skills for increasing their employability in the post COVID job market which is expected to be dominated by digital jobs.
- Digital technology now under pin effective participation across many aspects of everyday life and work. An individual's ability to make use of the technologies and consequent advantage depends upon the range of skills and competencies one possesses. A set of basic functional competencies are essential to operate a device, to be able to connect to internet and interact on a platform. On an average, 44 percent of Malawian population possess the foundational skills which are required to leverage any digital technology and digital dividend. More elaborate skills are needed to support individuals to achieve useful outcomes and make meaningful uses of technology which lacks among the Malawian population; 60

percent of the target population lacks the competency of operation a computer and accessing the internet on their mobile device. These can be seen as skills that result from the use of technology. Some of these skills are specific to interacting with digital devices and software. Other skills relate to the purposes for which the technology is being used.

- Digital competency among age group of 6 to 14 years is extremely low. Computer courses are yet to be taught in most of the primary schools while in secondary schools, despite availability of computer courses, lack of digital infrastructure availability is a challenge. During this skill gap assessment, it was observed, out of the 223 schools surveyed which have introduced computer courses, only 30 percent have computer devices available at school; out of which only 53 percent of the schools made computers accessible to the students in libraries and computer labs. *mHub* runs a programme that introduces computer skills to children between ages of 6 to 17. The children are taught coding skills using programming tools specially designed for the purpose of teaching children and also to make the development of basic digital application easy for their understanding. But a stark low awareness and willingness regarding such programmes among the parents has hindered success of the initiatives. More awareness required to create through campaigns, advertisements and marketing for better reach out so the young minds may benefit from these initiatives.
- Digital competency of people above 45 years is least among all the age groups across all skill levels - basic, intermediate and advance. Workforce between age of 25 to 44 are the ones with most quantum of digital skills in Malawian population. While, age has an influence on digital skill level, it has been observed, education level of an individual has been a great influencer in inclination towards upskilling and reskilling.
- It has been inferred from the survey, that, female have lesser competency level than the Malawian male. To bridge the existing Gender Digital Divide, *mHub* team under the *Eskills4Girls Project* in March 2021 completed an E-Skills learning exercise with 151 secondary school girls in the central region of Malawi. Other initiatives by *mHub* to train and facilitate girls through the basic programming skills likes of *Africa Code Week* and *Girls4Code* has been undertaken. Girls are more ignorant of the benefits of such digital skilling. More awareness and campaigns need to be undertaken for better reach out so to convince them to participate and get digitally skilled and participate in the digital workforce.

It has been observed during survey, acceptance of PWDs in society marked low, discouraging them to attain education and skills, and actively participate in workforce. With labour intensive job roles, their physical constraint has been a deterrent for the industries to recruit them as most respondents pointed infrastructure and mobility to be a barrier for PWDs. They can be trained and facilitated through basic programming skills and coding projects to develop their digital competency to overcome such challenges and accelerate digital employability of PWDs in digital jobs.

Average Digital Competency Level of Malawian Population:

Digital skills exist on a continuum, ranging in levels from basic to intermediate to advanced depending on competency area.

Competency area	Core Competences	Level*
Information and	Browsing, searching and filtering data, information and digital content	Good
data literacy	Evaluating data, information and digital content	Average
	Managing data, information and digital content	Average
	Interacting through digital technologies	Good
	Sharing through digital technologies	Below Average
Communication and	Engaging in schemes through digital technologies	Poor
collaboration	Collaborating through digital technologies	Poor
	Netiquette	Average
	Managing digital identity	Good
	Developing digital content	Average
Digital content	Integrating and re-elaborating digital content	Below Average
creation	Copyright and licenses	Below Average
	Programming	Very Poor
	Protecting devices	Average
Safety and data	Protecting personal data and privacy	Good
security	Protecting internet threats	Below Average
	Transactions	Average
Problem solving	Solving technical problems	Very Poor
Troblem Solving	Identifying needs and technological responses	Very Poor

Competency area Core Competences		Level*			
	Creatively using digital technologies	Poor			
	Identifying digital competence gaps	Poor			
*Scale of: Very Poor Poor Below Average Average Good Excellent					

Source: Primary Survey

Key Highlights

- Malawi's tech innovation ecosystem is relatively underdeveloped, but offers significant potential for job creation, particularly for youth. *mHub* has been selected as the first technology and innovation hub. An incubation centre of youth with business ideas in ICT and Innovation to promote digital entrepreneurship. Despite digital employment being low in Malawi presently, industries participated in the survey chose digital jobs as the most sought job roles in near future. Through the Ministry of Youth, Sports and Culture, J4Y project funded by Africa Development Bank (AfDB) has selected eight incubation centres in sectors of ICT, Agriculture, Manufacturing, and Mining to recruit and incubate youth within the age group of 18 to 35 years with new innovative business ideas and / or start-ups in their sectors of interest.
- Low digital literacy, inadequate infrastructure and weak ICT institutional capacity pose challenges to take advantage of the potential digital dividend being experienced worldwide. The ICT for Citizen Engagement, Transparency and Accountability an integrated mobile web-based technology platform named "*Mzinda*" has been implemented since 2016 as part of e-governance. The scope includes better citizens connect and e-applications in an effort to enhance public service delivery and efficiency. But to benefit such applications and e-governance schemes, the people of the country needs to possess good digital competency level with better access to good internet connectivity which is affordable. Monthly data bundle costs around USD 21 for 10 gigabytes costs around with both Telecom Networks Malawi (TNM) and Airtel, which is almost half the minimum monthly wage of a Malawian citizen. In an effort to enhance affordability Mobile Network Providers has taken following steps
 - Completely removed user fees and charges on person to person transfers on the same network
 - Reduced user fees and charges on person to person transfers across respective networks from a minimum of MK120.00 to MK20.00 that will accrue to National Switch Centre
 - **Revised** upwards daily transaction and account balance limits on nonbank mobile money services

Malawi ranks 97th out of 100 countries on the Inclusive Internet Index 2020, which assesses internet connectivity and accessibility, affordability, availability of relevant content and readiness. Landlocked with a population of over 18 million people, Malawi has one of the lowest and slowest growing rates of internet access in the world. According to the Malawi Population and Housing Census 2018, about 14 percent of the population uses the internet while about 52 percent have a mobile phone. Access to the internet is cost-prohibitive.

Contention on Digital space includes police surveillance of online users, online content removal and harsh sentences for internet users violating the Malawian laws also affects usage of digital rights of the users. Campaigns on cyber laws and data protection for netizens to create awareness on netiquettes to be undertaken.

- There is a lack of equipment, insufficient co-working and meeting space, high internet connectivity costs, limited training and mentoring opportunities in business plan development and other entrepreneurial skills, and limited financing opportunities to scale up good ideas. The SADC Innovation and Investment Challenge was introduced in Malawi, with the aim to support early stage data driven, tech-enabled innovations to address four key development challenges identified through FinMark Trust's (FMT) research for the accelerate financial and economic inclusion in SADC namely, i) Small Medium Enterprise (SME) finance, ii) Digital financial identity, iii) Women and savings (specifically with an objective to digitizing savings), and iv) Access to basic services in the SADC region. A number of future digital leaders are however not part of the formal education system or vocational programmes. The strategy will need to factor avenues to target and engage youth who do not have formal qualifications. The nature of digital skills is that it enables innovative youth without formal qualifications to develop new skills which they can leverage in the digital economy.
- Malawi is presently witnessing the fourth Industrial Revolution in Africa which is characterized by a range of new and emerging technologies that are blend of physical, digital and biological worlds. Technologies like Artificial Intelligence, Big Data, Machine learning Cloud Computing, The Internet of Things (IoT), Blockchain, Robotics, mobile applications, nanotechnology, 3D Printing, and other advanced wireless technologies are steering in a new era of digital economy worldwide. Digital technologies are intensely changing our economies and societies. Broadband networks are essential in enabling digital transformation. Internet connectivity can empower people with cost reduction in accessing

information and by expanding the means for sharing knowledge. Further it shall encourage greater civic engagement and improve the delivery of public services, create opportunities for new products (both goods and services), sustainable business models and aligned jobs. Malawi have embraced this trend, willingness to ensure that their citizens, businesses, and institutions are equipped to participate, innovate, and flourish in an increasingly online, digital-first environment.

Regardless of sector or occupation, with Digital Economy Strategy implementation, new work formats will offer individuals and entrepreneurs new digital job opportunities

The ICT sector forms the backbone of business activity, productivity, trade and social advancement. The sector continues to contribute significantly towards GDP and could be further nurtured to enhance its performance. The country has 22 licensed internet service providers (ISPs) with 10 active ISPs serving a limited customer base and mobile coverage registered at 85 percent (MGDS III, 2017- 2022).

Primary Sector: Agricultural sector dominates the Malawi economy providing livelihood to 80 percent households besides fishing and forestry. Agriculture low levels of technology utilization with higher dependency on high rainfall with low capital investments yielding low earnings has failed to attract young workforce towards this sector. It employs 64 percent (approximately 5.6 million) of the people in the employed labour force. However, majorly (about 95 percent) workforce in the agriculture sector are informally employed and controlled by smallholder farmers; therefore, meagre returns for their labour and do not benefit from social protection. With the fourth industrial revolution picking up in Africa, Agri-tech companies are slowly progressing which includes food processing units and other backward forward Agri-related industries.

Digital Transformation to benefit farmers through weather forecasting, improved crop and livestock production management, better implementation of national food security leveraging e-governance and support in strategic implementation of National Agriculture Policies. Affordable Input Programme (AIP) targeted 4,279,100 farming households subject to the Nation Registration Bureau (NRB) for validation. Digitalization of beneficiaries' list contributed in success of the program through the following measures:

- Use of the electronic system as a platform of inputs provision to programme
- Beneficiaries
- > Suppliers allocated specific Extension Planning Areas (EPA) to retail their inputs
- Multi-sector approach of implementation
- Empowerment of local development structures

However, certain challenges are yet to be addressed for smooth implementation:

- Poor network connection that delayed the process of redemption
- Missing entries of name
- Mismatching of IDs in the system and the IDs that beneficiaries brought

Secondary or Manufacturing Sector: According to UNIDO's Competitive Industrial Performance Index 2021, Malawi ranks 143rd with a score of 0.002 against world average of 0.068.

Malawian manufacturing sector is more labour intensive with 66.3 percent manual labour.



Figure 69: Low Technology driven Industries in Malawi, UNIDO 2021

Only 5.4 percent of the industries have adopted to High end technologies. With the COVID has hard hit the manufacturing sector as with restrictions and protocols, operational challenges have affected. Industries are now inclined towards better adoption to evolving technologies which definitely shall result in decline in number of jobs in certain manual skills but shall be able to benefit from addition

of technical and digital job roles. During the survey, due to present uncertainties, Industries were unable to project the number of digital jobs to be created in their organization but has chosen 'digital skills' as most preferred job roles to be included in near future. Some have begun digital transformation journey.



Figure 70: Manufacturing Sector in Malawi, UNIDO 2021

Tertiary or Service Sector: Digital technologies have been forecasted to be one of the major drivers of productivity, with successful economies depending on greater numbers of digitally skilled workers than has previously been the case. With a shift from labour intensive to digital intensive economy, Service industry is predicted to emerge. Sectors like Financial, Health, Tourism, Industry and Trade all to benefit from growing ICT sector which shall yield Digital Dividend.

Most rural areas in Malawi are characterised by inadequate infrastructure and service availability, low employment and income growth, and rising poverty. With digital skilling among rural youth, will further enhance the employability including the dropouts and streamline them into organized workforce. There will be an expected higher labour force participation including of women, PHDs and other vulnerable groups with digital skilling and employments. Gender divide can be bridged with online and freelance jobs once they are digitally competent. Digital skills will qualify workers for jobs in traditional sectors while also empowering them to thrive in emerging sectors and even launch their own businesses. As the nature of work continues to change, digital skills will become increasingly important for workers to engage in new forms of work, such as virtual freelancing, and participate in the gig economy and online

job marketplaces.

What jobs will emerge, disappear or change in the future due to digital technologies, is however, unpredictable. Therefore, Malawian education and skilling system needs to be flexible to respond not only to new jobs in ICT professions, e-commerce and online-service provision, but also for changes in traditional industrial and artisan jobs. For example, digital devices or mobile money will likely affect the work of technicians, lower end service providers, mechanics, retailers, who will need basic to advanced digital skills in order to be able to compete in the digital economy.

Consumers, on the other hand, will also need to acquire digital skills in order to shop, pay, work, communicate, study. Regarding the latter, technology-based teaching and learning, such as the bridge academy, will bring in increased demand for personalized and self-learning using online resources/mobile learning labs. All these changes will pose considerable demands on the existing skills development system in Malawi.

Way Forward

Digital technologies and related competencies are intensely changing our economies and societies. Good internet connectivity is essential in enabling this transformation. By reducing the cost of accessing information and by expanding the means for sharing knowledge, these

networks can empower people, encourage greater civic engagement and improve the delivery of public services, as well as helping to create opportunities for new goods, services, business models and jobs. However, these opportunities come with challenges.

> For workers to successfully perform digital work, they must develop digital skills

Malawi is experiencing shortage in digitally skilled labour forces slowing implementation of digital initiatives in the countries. Government initiatives combined with organizations working for development of Malawi need to prioritize digital skilling of the population at large. Detailed level strategy for skilling and education has to be charted for digital empowerment of the masses.

Need for Labour Market Information System and Job Portals

The Ministry of Labour operates public employment services in all districts of Malawi. Services include - job seeker registration, placement, vacancy registration, guidance and counselling to school leavers and job seekers for all at its regional and district labour offices.

Government have witnessed need for Labour Market Information System (LMIS) and Job Portals which is yet not functional hence, 13 percent of government vacancies are yet to be filled. A functional LMIS shall ensure improved availability of labour market information to facilitate evidence-based



decision-making of both employees and *Figure 71: Need for developing LMIS, Ministry of Labour, Malawi* employers; the issues of data management and information gaps between employers and the labour force shall reduce and help find suitable jobs and to recruit electronically. Along with effective LMIS and jo portals together be leveraged to assist job seekers and recruiters to make informed decisions and choices.

Need for effective Management Information System (MIS) to be built for each department

Data migration and digitisation of all records and documents is important. Challenges in coordination of Key stakeholders among the ICT sector working group has led to challenges in developing common goal for the sector leading to **data Insufficiency**. The Malawi Digital Broadcast Network Limited (MDBNL) responsible for implementing the Digital Migration Project (part II) funded by Malawi Government needs to be expeditated for leveraging it for other e-

government program and initiatives. This shall help in reducing cost for knowledge management and exponentially increase the outreach of information.

Approach for Digital Inclusion in Malawi

During the survey, we received an overwhelming consensus amongst government departments, development/funding agencies, and implementing partners to carry out *e*-*Government program and initiatives*. To achieve this, certain projects have been initiated which are facing delay in implementation timelines

- Ministries / Departments / Districts would fully leverage the Common and Support ICT Infrastructure being established by Government of Malawi. MACRA would also evolve/ lay down standards and policy guidelines, provide technical and handholding support, undertake capacity building and R&D etc.
- The existing/ ongoing e-governance initiatives would be suitably revamped to align them with the principles of Digital Malawi. Scope enhancement, Process Reengineering, use of integrated & interoperable systems and deployment of emerging technologies like cloud & mobile would be undertaken to enhance the delivery of Government services to citizens.
- Districts would be given flexibility to identify for inclusion additional district-specific projects, which are relevant for their socio-economic needs especially in rural areas.
- e-Governance would be promoted through a centralised initiative to the extent necessary, to ensure citizen-centric service orientation, interoperability of various e-Governance applications and optimal utilisation of ICT infrastructure/ resources, while adopting a decentralised implementation model.
- Successful models and businesses to be identified and their replication promoted proactively with the required production and customisation wherever needed.
- Public Private Partnerships would be preferred wherever feasible to implement egovernance projects with adequate management and strategic control.
- Adoption of Unique ID would be promoted to facilitate identification, authentication and delivery of benefits.

- Restructuring of national information centre would be undertaken to strengthen the IT support to all government departments from macro to all micro level.
- The positions of Chief Information Officers (CIO) would be created in all 19 key Ministries so that various e-governance projects could be designed, developed and implemented faster. CIO positions will be at Additional Secretary/Joint Secretary level with overriding powers on IT in the respective Ministry.

Brief Recommendations:

Integrating soft skills and entrepreneurial/business skills development into digital skills educational and training programmes. To succeed in the digital economy, people will need basic digital skills related to the effective use of technology, as well as soft skills necessary to ensure collaborative and effective work. Entrepreneurial/business skills are likewise important, as

students and trainees with the right knowledge, skills, and entrepreneurial mind-set can find opportunities to start a new business. By building these skill sets in a complementary way, learners will be more effective when applying their skills in the real world.



Incorporating basic digital skills, coding and computational thinking from school level onwards. Instruction in basic ICT skills, coding and computational thinking can be a part of school curriculum at all gradelevels. These foundational skills will enable young people not just to use their skills, but also to write the programmes and create the new technologies

that drive change - and countries can achieve scale. Extending basic, intermediate and advanced digital skills beyond schools. Job training programmes and other initiatives that target out-of-school youth and adults allow participants to learn a range of digital skills - such as new coding languages - to keep up with technological progress as they advance in years or experience.

Instituting dynamic, peer-learning instruction. Over the last decade, interactive and peer-driven instructional approaches have gained tremendous momentum across many disciplines, and especially for digital skills training. This style of instruction fosters confident problem-solving *ITU Digital Skills Toolkit* and the creative, collaborative mind-set valued in the

digital economy. For example, instructors can incorporate resources for learning to code that allow learners to create their own games and apps. These models can be used both in school

programmes as well as in programmes for out-of-school youth and in lifelong learning programmes for adults.



Establishing cross-sectoral collaboration and partnerships. Most digital skills strategies involve a range of partners who can leverage their unique strengths in achieving the goals of the national strategy. For instance, infrastructure can be leveraged through partnerships with libraries, tech hubs, makerspaces, NGOs, and after-school clubs. Partners often include

organizations from the government sector, the private sector, NGOs, academia and non-formal training providers.



Develop sustainable, affordable cost structures. The most effective way to implement this approach is to integrate digital skills into national education programmes that are provided to all students, for free or where employers include upskilling and reskilling as a job benefit, making sure of course to allocate budget for such programmes. Commercial skills providers

can employ strategies such as charging employers a placement fee - or can set up systems where students re-pay their training fees over time once they secure a job.



Provisioning for job-ready digital skills through government schemes and benefits. Government can conduct a cost analysis, for example, on the relative costs of funding job-ready digital skills provision and paying ongoing unemployment benefits to determine if it makes financial sense to redirect unemployment funds for such training.



Upskilling of Instructors. Many countries are taking steps to equip teachers, librarians, and other instructors with the requisite skills to use technology and to teach digital skills in new, engaging and hand-on ways that ICTs make possible. Strategies for doing this include putting teachers through short-term training courses, team teaching, pairing community or private

sector experts - for example pairing trainers from non-formal training providers with qualified teachers - as well as using train-the-trainer models. To make these strategies more effective, school administrators can include additional measures. These might include ensuring teachers are allowed enough time to learn new skills outside working hours, providing them the support needed during and after the training to ensure a smooth transition, and providing incentives to teachers such as additional pay.



Use existing infrastructure, upgrading it where necessary. Where they exist, schools, public libraries, and community Centres that are connected to the internet and equipped with computers or other digital devices, can be leveraged to provide digital skills training to a wider audience. Furthermore, in low bandwidth environments, some cloud-based learning

platforms can provide offline access and synchronization. Public funds often need to be earmarked to fund infrastructure improvements, maintenance, and upgrading when technology needs replacement.



Deploy makerspaces. Makerspaces can play a role in developing advanced digital skills. They can also be used by students of all ages to test the new basic and intermediate skills they learn in school. Makerspaces do not have to procure expensive equipment but can also use toys and microcontrollers.



Adapting content, curriculum and programmes to meet changing needs. Digital skills training programmes of course will need to adapt over time. This requires regular monitoring, evaluation and refreshing. In the near future, big data is likely to play a role in anticipating new digital skills needs.



Obtain input from industry and employers. It is very important to close the gap between the needs of the private sector and what students learn either in school or in other skills training programmes. The private sector can provide critical guidance to enhance the vibrancy and relevancy of digital skills strategies. For example, programmes can follow the coding

bootcamp 32 Digital Skills Toolkit model of creating industry councils to stay current on which ICT skills are needed both now and into the future. E-government service providers can similarly provide feedback on whether citizens taking basic digital skills training are well equipped to complete online forms or conduct other e-government activities.



Leveraging existing education, training curricula and tools. There is myriad of open source resources that have been created by organizations and collaborations, much of it free or low cost.



Introduce sustainability models that lower upfront costs for learners. Instead of relying on student fees up front, explore other models to keep the costs of advanced training more manageable for learners. For instance, some coding bootcamps have students pay for their program only after they have found work, while some employers motivate and upskill their

staff by reimbursing them for the costs of completed coursework.

Further, *Digital Skills and Jobs Creation Strategy Report with Implementation Plan* shall offer to define roles and responsibilities of all key stakeholders and partners coming together to share good practices in Malawi. In setting out some guidelines for designing a whole-ofgovernment approach to policies, this strategy aims to assist Malawi to enhance their digital prospects and get ready the population to make progress on international, national and regional level.





References

- World Bank. (2016). World Development Report -Digital Dividends. Washington: World Bank Group. Accessed from <u>World Bank Document</u>: <u>http://documents1.worldbank.org/curated/en/896971468194972881/pdf/102725-</u> <u>PUB-Replacement-PUBLIC.pdf</u>
- International Telecommunication Union. (2019). Measuring digital development Facts and figures 2019. Accessed from: <u>https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2019_r1.pdf</u>
- Mühleisen, M. (2018). The Long and Short of The Digital Revolution. Finance & Development, 55(2), 4-8. Accessed from: <u>https://www.imf.org/external/pubs/ft/fandd/2018/06/impact-of-digital-technology-on-economic-growth/muhleisen.htm</u>
- International Telecommunication Union. (2019). Measuring digital development Facts and figures 2019. Accessed from: https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2019_r1.pdf
- International Telecommunication Union. (2020). Measuring digital development Facts and figures 2020. Accessed from: FactsFigures2020.pdf (itu.int)
- ITU. (2003). World Summit on the information society Plan of action. Accessed from: <u>WSIS: Plan of Action (itu.int)</u>
- United Nations. Sustainable Development Goal 9 Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation. Accessed from: Goal 9 | Department of Economic and Social Affairs (un.org)
- Digital skills critical for jobs and social inclusion, UNESCO: <u>https://en.unesco.org/news/digital-skills-critical-jobs-and-social-inclusion</u>

- World Bank. (2020). Digital Economy for Africa Country Diagnostic Tool and Guidelines for Task Teams. The World Bank Group. Accessed from:
 <u>1 - DE4A Diagnostic Tool (worldbank.org)</u>
- Malawi Population and Housing Census 2018
- The World Bank Data. Accessed from: <u>https://data.worldbank.org/indicator/SP.POP.BRTH.MF?locations=MW</u> https://data.worldbank.org/indicator/NY.GNP.PCAP.CD
- Project Appraisal Document DIGITAL MALAWI PROGRAM PHASE I: DIGITAL FOUNDATIONS Project
- TEVETA website, <u>https://tevetamw.com</u>
- World Information Technology and Services Alliance (WITSA) and Portulans Institute (PI), 2019. NRI 2019. Accessed from: <u>https://networkreadinessindex.org/nri-2019-countries/#complete-ranking</u>
- Digital 2020 Malawi, Hootsuite
- Igunza, E. (2015). Malawi's expensive mobile phone habit. BBC Africa. Accessed from: <u>https://www.bbc.com/news/world-africa-31533397</u>
- NATIONAL ICT MASTER PLAN, Malawi
- > The Digital Malawi Program Phase I: Digital Foundations Project Grant Manual
- Benchmarking the digital and financial capability of consumers in the UK (2017).
- OECD Skills Outlook 2019: THRIVING IN A DIGITAL WORLD: <u>https://www.oecd-ilibrary.org/education/oecd-skills-outlook-2019_df80bc12-</u> <u>en#:~:text=This%20edition%20of%20the%200ECD,among%20and%20within%20countries!</u> <u>%20populations.</u>
- National Statistics Office, Govt of Malawi (2020). *Malawi in Figures*.

- Agribusiness, Business management and entrepreneurship (including marketing, venture capital training etc), Vocation training, Community development, Network design and interaction service, Monitoring and evaluation, Information computer technology, Computers 1, 2 and 3, Languages, Intelligence monitoring system, Initial primary teacher education, Bricklaying, Carpentry & Joinery, Diploma in Automotive Mechatronics
- Key courses with advanced digital skills M.Sc. Information Systems and Ph.D. in Information Technology
- Malawi National ICT Master Plan 2014-31 document
- Competitive Industrial Performance Index 2021, UNIDO
- Annual Economic Report 2021, Government of Malawi
- National Enterprise ICT Survey, 2019
- National Public Sector ICT Survey, 2019



Annexures

Annexure

A. Approach and Methodology

The implementation approach to the assignment consists of two components:

- Digital Skills Ecosystem and Gap Assessment
- Digital Skills Development Strategy



The four-step approach was put into an operational form using the Identify – Design – Deliver – Sustain (IDDS) approach.

This approach was adopted for the study, encompassing of:

- Identify: Confirm the client's requirements and scope, and perform detailed componentspecific planning along with assessment of it by the client including identification of Key Stakeholders
- Design: Secondary and Primary Data collection of relevant information from different stakeholders
- Deliver: Undertaking a comprehensive as-is gap analysis and submission of the draft report
- > Sustain: Propose strategy recommendations for Job creation and digital skilling initiative

Digital Skills Ecosystem and Gap Assessment

Approach for the Study

The PPPC Malawi Digital Skills Ecosystem and Gap Assessment has been designed to serve as a comprehensive national digital skills assessment. The digital skills assessment has been used to determine the level of existence of a digitally skilled cohort at a national level, to assess skills demand from industry and other sectors, to identify skills gaps, and to develop policies to address future digital skills requirements. It is designed for policymakers and other stakeholders, such



Figure 72: Elements of Digital Skills and Ecosystem Assessment

as partners in the private sector, and non-governmental organizations. The digital skills and Ecosystem assessment encompass four elements of the scope of work as highlighted.

Methodology adopted for the Study

For the study, a mixed methodology was adopted, making use of both qualitative and quantitative research methods. EY adopted a multi-dimension methodology for conducting the quantitative analysis on the output of the primary and secondary research. It is expected that different methodologies of analysis yield varying results due to the variable nature of scientific methodologies.



- Use of qualitative tools helped understand the perspectives of different stakeholders especially the digital divide - skill gaps and challenges faced, enabling factors and changes required.
- Quantitative analysis provided level of digital skill competency of the Malawian population, Supply and Demand side as-in situation and further helped to triangulate the findings from qualitative research.

Estimation of Sample Size

The scientific methodology for sampling used is as below:

$$n = \left[\frac{1}{N} + \frac{N-1}{N} \frac{1}{PQ} \left(\frac{k}{z_{1-\alpha/2}}\right)^2\right]^{-1} \text{ where N=population size, P=population proportion, Q=1-P}$$

k=desired level of precision, $Z_{1-\alpha_{1}}$ is the value of the normal standard coordinate for a desired level of confidence, 1- α .

Sampling method used for scientific selection of each respondent category using disproportionate stratified sampling (equation ii) is shown as below:



Source: Jeff Watson, Research Assistant, Cooperative Extension & Outreach

The reference citation for this Tipsheet is: Watson, Jeff (2001). How to Determine a Sample Size: Tipsheet #60, University

Park, PA: Penn State Cooperative Extension.

Symbols used:

- n= Estimated Sample size
- N= Sum total of Industries (Large, Medium, Small & Micro) in particular district
- $P{=}\,Estimated$ variance could vary from 0.1 to 0.5 (as the grouping reduces to heterogeneity) . For this study, we have taken this as 0.1
- A= Precision desired is between 5-10% in research base d surveys.
 For this study, we have taken this as 0.1
- Z= Confidence level: 1.96 for 95% confidence; 1.6449 for 90%; 2.5748 for 99%. For this study, we have taken at 90% confidence level
- · R= Response rate : wherein R is calculated as :
 - R= Total no. of Employer's approached Total no. Employer's Responded

Sampling Rationale

Research tools have been administered onsite on suggestive sample size for digital skills assessment: Considering the population of Malawi as 17,563,749⁴⁶ (Census 2018). Confidence level of 95% with confidence interval of 0.5% has been considered for random sampling across all respondent groups.

- > For Digital skills assessment, targeted Sample Respondents included Malawian population
 - Age groups 6 years above
 - Gender groups Male/Female
 - Region Urban/Rural
- For digital employment demand assessment, both private and public sector organizations have been represented in primary survey. Self-Employed and Entrepreneurs has been included to understand their journey
- Supply side assessment included primary and secondary schools, training of trainer's institutes, college, universities, polytechnics, TEVET, technical hubs, etc.
- Similarly, other key informants have been included NGOs and other developmental organizations working in field of - digital literacy, skilling, women empowerment, PWDs, and other vulnerable groups

Targeted Stakeholder Category	Sample Size
Malawian Citizens	2600
ICT Industries	248
Other Industries	367
Entrepreneurs/Freelancers/Self-employment	100
HR Agencies/Job Consultants	13
Government Ministries	19
Embassies in Malawi	10
Primary Schools	102
Secondary Schools	297
Tertiary Educational Institutions (Colleges/Universities)	40
Technical Hubs	12
Teachers Training Institutes	8

Targeted Sample Size for Primary Research

⁴⁶ 2018 Malawi Population and Housing Census Report

Targeted Stakeholder Category	Sample Size
Technical Training Institutes	7
International Organizations-	19
NGOs	50
Any other relevant organization (Suggested by Client)	10
Total Targeted Sample Size	3902

Development of Research Tools

To meet the objectives the team conduct interviews and / or focused group discussions with relevant stakeholders. A set of survey questionnaire has been developed in a manner so

that the objectives and outcomes of the research can be clearly identified, and the results are quantified which are easy to analyses and incorporate in the final report.

The questionnaires have been undertaken through a digital medium (CAPI method

Digital Skill Competency of Primary Survey -Malawian Annexure 1 Population **Digital employment** Primary Survey Annexure 2.1, 2.2 demand assessment **Digital Skills** Ecosystem and Gap Assessment Supply side Primary Survey assessment of Annexure 3.1, 3.2, workforce with 3.3 digital skills **Other Key Primary Survey Informants - NGOs** Annexure 4.1, 4.2, and development 4.3 organizations

Figure 73: Research Tools developed

and other data recording from the primary survey

adopted) on suitable technology platforms

Details of the methodology used are given in the subsequent Chapters:

- a) Digital Skills Assessment
- b) Supply Side Assessment
- c) Demand Side Assessment

Primary Survey and Data Collection

Over 3 months (March 21 - June 21), the project team undertook the fieldwork and collected the responses from the various target groups and samples as was defined in the sampling stage and filled up the assessment tools. A participatory approach (of Stakeholders) has been adopted for gathering requisite information.

Following data collection method was adopted for the assessment study:

- a) Sample Surveys
- b) Focus Group Discussions
- c) In-depth Interviews
- d) Observations
- e) Review of documents and policies received from Client and Key Stakeholders
 - > An agency was onboarded for conducting primary survey
 - An Introductory workshop was conducted with the primary survey agency to explain research objectives, producers, guidelines and timelines
 - The agency administered the questionnaire among the sample population and collected data
 - The agency visited selected government and private employers and conducted the survey
 - > The agency was responsible for collecting and cleaning the data

Field Team Orientation

- Team of field enumerators was oriented prior to commencement of primary data collection. The research team briefed about the overall objective of the assignment and understanding about the use of research tools.
- COVID -19 restrictions and government norms were illustrated to the field team for compliance

Pilot Testing of Research Tools

- All research tools were first piloted, and field tested. The testing of these tools allowed research team surveyors to foresee potential challenges and limitations with primary data collection. No modification or need for revision of tools were required
- The research tools developed were primarily in English language and was translated into native languages as needed. These were further shared with client for approval before commencement of Primary Data Collection. Thereafter operational plan was prepared and executed

Data collected from the field

Table 15: On field data collected

Stakeholder	Data Collection Tool	Targeted	Achieved
Category		Sample Size	Sample
Digital Skills Competency	Annexure1 Malawian population	2600	2793

Stakeholder Category	Data Collection Tool	Targeted Sample Size	Achieved Sample
	Age/Male/Female/PWD/Urban/Rural/Income groups		
Demand	Annexure 2.1 PSUs/Private Organizations, Large/MSMEs/Entrepreneurs	715	717
Stakeholders	keholders2.2 Govt. Dept/Ministries Parastatals (Trade partners/boards)	19	29
	3.1 Primary and Secondary schools	399	427
	3.2 Colleges/Universities	40	Sample Sample 717 29 427 40 12 7 8 13 0 19 60
Educational	3.3 Technology Hubs and co-working spaces	12	
Stakeholders	keholders 3.3 Teachers Training Institutes-Head of the Institute 3.3 Technical Training Institutes/TEVET centres	7	7
		8	8
	4.1 HR Agencies	13	13
Others/Key	4.2 Embassies (were excluded in consultation with PPPC)	10	0
Informants	4.3 International Organizations	19	19
	4.3 Organizations working in Digital Literacy/Education/Skills Development/Women/PWDs	60	60
	Total Respondents	3902	4125

Data Quality Assurance

- Besides training of field team on use of research tools and pre-testing of research Tools, sample data were verified by the assigned Supervisor on daily basis using the Quality Control Protocol
- In addition, the quality assurance team made surprise random visits at survey locations to ensure data collection protocols being followed onsite

- On completion of primary data collection by field team, random verification checks on respondents and data collected was undertaken across various categories to ensure data authenticity
- > Data collected was checked for ensuring the following aspects were taken care of:
 - Data completeness and validation
 - Data feeding & Compilation
 - Removal of Duplicated entries
 - Final dispositioning of records
 - Accuracy in Data Cleaning
- In compliance with EU General Data Protection Regulation (GDPR), Adherence done to the Personal Data Protection of all the respondents participating in the assessment. Some of the key privacy and data protection rules followed are:
 - Consent of each respondent has been obtained for data processing
 - Information has been collected only for this relevant study and no personal data for any commercial purpose
 - All data collected has been archived and shall be handed over to PPPC on completion of the project
 - Soft copy of respondent data is protected in a highly secure and confidential proprietary software.

Data Analysis

On the completion of data collection, the data was checked and cleaned appropriately. Subsequently the database was analysed using SPSS tool and further data analysis. The data analysis focused on the following dimensions of the project:

- > Current level of digital employment across different sectors of Malawian economy
- Digital employment enumerating from mobile based financial inclusion
- Enumerating demand for digital workforce of Malawi from close trading partners different jobs
- Nature of current digital jobs
- Digital workforce recruitment trends
- > Employability skills preferred by industry in digital workforce
- > Challenges faced by industries in Malawi in attracting digital workforce

Dissemination and Validation Workshop

For finalization of the Digital Skills Ecosystem and Gap Assessment Report, the interim findings and validation of the suggested recommendations to be presented to PPPC and other stakeholders to be conducted through a Workshop. Feedbacks to be incorporated to finalize the Digital Skills Strategy.

Digital Skills Development Strategy

Digital Skills Strategy has been an instrument to bridge the gap between the demand side needs and the supply side shortcomings. The strategy report has been built upon the findings of the Digital Skills Gap & Ecosystem Assessments and develops three clear roadmaps with quantifiable targets and will contain three overarching components:

- Training in digital skills
- Facilitating digital & online jobs
- Establishing national technology & innovation centres

To formulate the Digital Strategy for Job Creation and Recommendations, along with the digital skill gap assessment, the following activities have been performed:

- Develop understanding of the as-is state of Malawi ICT ecosystem including existing/ ongoing e-governance initiatives
- Review of curriculum/ policy/ other documents received from client and key stakeholders
- FGDs were conducted during the Strategy Development phase among various Stakeholders:
- 1. Malawi Focus Group Discussion- Group 1: Understanding ICT related issues

Participant Mix:

- Technology students
- IT Professionals
- Technology start-up professionals
- 2. Focus Group Discussion 2- To understand the education ecosystem and curriculum Participant Mix:
 - Officials from Ministry of Education, National Council of Higher Education, Higher Education Students Loans and Grants Board, Secondary & Distance Education
 - Officials from TEVETA
 - ▶ HODs and Principals from renowned colleges and Teacher Training Institutes
 - Education NGOs and other developmental organization representatives
- Focus Group Discussion 3- To understand the demand side (Industry requirements) in Malawi

Participant Mix:

- Industry representation from across sectors (including Finance, Technology, Education and Healthcare)
- Representatives from Ministry of Labour

- Representatives from Innovation Hubs, Malawi
- Representatives from Employer Consultative Association
- 4. Focus Group Discussion 4- To understand the challenges faced by the Malawian population w.r.t the ICT infrastructure of the country

Participant Mix:

- Technology students
- IT Professionals
- Technology start-up professionals

Limitation of the Study

Uncertainties over the long-term impact of pandemic

The global impact of coronavirus pandemic will continue to cast a cloud of uncertainty over the short-term and long-term digital transformation roadmap in the country. While the advanced and developing countries accelerated their digital transformation cycle with increased adoption of emerging technologies, the rest have been found lagging in their efforts to reduce the digital divide.

It was observed that a significant number of employers feel that the pandemic has disrupted their growth trajectory. They would want to wait and evaluate the industry trends once the pandemic was over before committing on a digital transformation journey or investing in their employee skill development programs.

Data Insufficiency was a strong barrier in the Data to Insights journey

One of the limitations of the Digital Skills and Ecosystem Assessment was lack of a strong data management system in the country. Most of the industry respondents did not have robust systems in place to capture data and use it in decision making. The data driven decision making is at a very nascent stage in the country and this tossed up challenges in arriving at employment projections, demand for specific job roles or to map the supply side of skills ecosystem in the country.

Operational Challenges in data collection

Performing the data collection process in the middle of pandemic was an operational challenge. While extra precautions were followed by the trained on-field team, availability of stakeholders, balancing the sampling mix and people's apprehensions on interacting with strangers in such a time casted unforeseen challenge. It was observed that some of the questions were misinterpreted or not understood by respondents as it became difficult to get close to them and explain in detail while also maintaining social distancing norms. The team made the best efforts in overcoming these challenges, but we cannot ignore this as a limitation in the study.

B. Sampling for Digital Skills Competency Assessment

Designs	Districts	Rural		Urban		Targeted Total	
Regions	DISTRICTS	Male	Female	Male	Female	Targeted Total	
	Chitipa	8	8	8	8	32	
	Karonga	13	13	13	13	52	
	Nkhata Bay	10	10	10	10	40	
Northarp	Rumphi	8	8	8	8	32	
Northern	Mzimba	35	35	35	35	140	
	Likoma	5	5	5	5	20	
	Mzuzu City	8	8	8	8	32	
	Northern Total	87	87	87	87	348	
	Kasungu	31	31	31	31	124	
	Nkhotakota	14	14	14	14	56	
	Ntchisi	11	11	11	11	44	
	Dowa	29	29	29	29	116	
	Salima	17	17	17	17	68	
Central	Lilongwe Rural	61	61	61	61	244	
	Mchinji	22	22	22	22	88	
	Dedza	31	31	31	31	124	
	Ntcheu	25	25	25	25	100	
	Lilongwe City	37	37	37	37	148	
	Central Total	278	278	278	278	1112	
	Mangochi	43	43	43	43	172	
	Machinga	27	27	27	27	108	
	Zomba Rural	28	28	28	28	112	
Southorn	Chiradzulu	12	12	12	12	48	
Southern	Blantyre Rural	16	16	16	16	64	
	Mwanza	5	5	5	5	20	
	Thyolo	27	27	27	27	108	
	Mulanje	25	25	25	25	100	

.

Dogione	Districts	Ru	ıral	Ur	ban	Targeted Total	
Regions	DISTRICTS	Male	Female	Male	Female	Targeteu Totai	
	Phalombe	15	15	15	15	60	
	Chikwawa	21	21	21	21	84	
	Nsanje	10	10	10	10	40	
	Balaka	16	16	16	16	64	
	Neno	5	5	5	5	20	
	Zomba City	5	5	5	5	20	
	Blantyre City	30	30	30	30	120	
	Southern Total	285	285	285	285	1140	
Total Sample Size		650	650	650	650	2600	

To include respondents across all schemas						
Respondent Age Group *	Coverage %					
5 to 14 years	15%					
15 to 24 years	25%					
25 to 34 years	25%					
35 to 44 years	15%					
45 to 54 years	10%					
55 and above	10%					
*10% of Person with Disability (PWD) to be considered acro	ss all age groups					
Respondent Income Group	Coverage %					
below MWK 164,191	40%					
above MWK 164,191	60%					

C. Sampling for Demand side Assessment

a. Industries

Stakeholder Category	Total Count	Target Size
ICT companies in Malawi (L&D/Training/HR Dept	606	249
Head/Officers) **	090	240

Non-digital or less digital intensive Industries		
(L&D/Training/HR Dept Head/Officers) **	11819	367
**To include respondents across all schemas -		
Private and Public sector Units		
Large and MSMEs (as defined by Ministry of Industry and Trade, Malawi)		
Any other		

b. Others

Stakeholder Category	Target Size
Entrepreneurs/Freelancers/Self-employment	13
HR Agencies/Job Consultants (Director or equivalent)	13
Government Ministries (HR Dept Head or equivalent)	19
Embassies in Malawi (HR Dept Head or equivalent of Top 10 countries for Migration from Malawi)	10

D. Sampling for Supply Side Assessment

a. School

Region	Primary School	Secondary School
Northern	24	67
Central	33	130
Southern	45	100
Total Sample Size	102	297
Principal or equivalent to be Respondent		

For primary schools- 3 schools in each district to be selected across the 3 regions from below list (Total 102 schools)

For secondary schools – at least 3 schools in each district to be selected across the 3 regions from below list (Total 297 schools)

Northern	Central	Southern
Chitipa	Dowa	Chiradzulu
Karonga	Kasungu	Mulanje
Likoma	Nkhotakota	Phalombe

Mzimba North	Ntchisi	Thyolo
Mzimba South	Salima	Balaka
Mzuzu City	Dedza	Machinga
Nkhata Bay	Lilongwe City	Mangochi
Rumphi	Lilongwe Rural East	Zomba Rural
	Lilongwe Rural West	Zomba Urban
	Mchinji	Blantyre City
	Ntcheu	Blantyre Rural
		Chikwawa
		Mwanza
		Neno
		Nsanje

b. Other Educational Institutes

Stakeholder Category	Targeted Total
Tertiary Educational Institutions	40
(Colleges/Universities)-Principal or equivalent	
Technical Hubs-HOD/Founders/co-founders	12
Teachers Training Institutes-Head of the	8
Institute/Master Trainers	Ŭ
Technical Training Institutes-Head of the	7
Institute/Master Trainers	
Should include Malawi Institute of Education and Malawi College of Distance Education	

E. Sampling for Key Informants

Stakeholder Category	Targeted Total
International Development Organizations working in	19
Malawi- Director or equivalent	
NGOs working in Education/Skills Development	At least 20
NGOs in Digital Literacy and ICT related field	At least 10
Organizations working on Gender equality/ Women	At least 10
empowerment	

-

Stakeholder Category	Targeted Total	
Organizations working for people with disability/special	At losst 10	
needs (representation from each type)	At least 1	
Any Other relevant Organization	(as suggested by client)	

Our offices

Ahmedabad

2nd floor, Shivalik Ishaan Near. C.N Vidhyalaya Ambawadi Ahmedabad - 380 015 Tel: +91 79 6608 3800 Fax: +91 79 6608 3900

Bengaluru

12th & 13th floor "U B City" Canberra Block No.24, Vittal Mallya Road Bengaluru - 560 001 Tel: +91 80 4027 5000 +91 80 6727 5000 Fax: +91 80 2210 6000 (12th floor) Fax: +91 80 2224 0695 (13th floor)

Ground Floor, 'A' wing Divyasree Chambers # 11, O'Shaughnessy Road Langford Gardens Bengaluru - 560 025 Tel: +91 80 6727 5000 Fax: +91 80 2222 9914

Chandigarh

1st Floor SCO: 166-167 Sector 9-C, Madhya Marg Chandigarh - 160 009 Tel: +91 172 671 7800 Fax: +91 172 671 7888

Chennai

Tidel Park 6th & 7th Floor A Block, No.4, Rajiv Gandhi Salai Taramani, Chennai - 600 113 Tel: +91 44 6654 8100 Fax: +91 44 2254 0120

Delhi NCR

Golf View Corporate Tower - B Sector 42, Sector Road Gurgaon - 122 002 Tel: +91 124 464 4000 Fax: +91 124 464 4050

3rd & 6th Floor, Worldmark-1 IGI Airport Hospitality District Aerocity New Delhi - 110 037 Tel: +91 11 6671 8000 Fax +91 11 6671 9999

4th & 5th Floor, Plot No 2B Tower 2, Sector 126 NOIDA - 201 304 Gautam Budh Nagar, U.P. Tel: +91 120 671 7000

Hyderabad

Oval Office 18, iLabs Centre Hitech City, Madhapur Hyderabad - 500 081 Tel: +91 40 6736 2000 Fax: +91 40 6736 2200

Jamshedpur

1st Floor, Shantiniketan Building Holding No. 1, SB Shop Area Bistupur, Jamshedpur - 831 001 Tel: + 91 657 663 1000

Kochi

9th Floor "ABAD Nucleus" NH-49, Maradu PO Kochi - 682 304 Tel: +91 484 304 4000 Fax: +91 484 270 5393

Kolkata

22, Camac Street 3rd Floor, Block C" Kolkata - 700 016 Tel: +91 33 6615 3400 Fax: +91 33 6615 3750

Mumbai

14th Floor, The Ruby 29 Senapati Bapat Marg Dadar (west) Mumbai - 400 028 Tel: +91 22 6192 0000 Fax: +91 22 6192 1000

5th Floor Block B-2 Nirlon Knowledge Park Off. Western Express Highway Goregaon (E) Mumbai - 400 063 Tel: +91 22 6192 0000 Fax: +91 22 6192 3000

Pune

C-401, 4th floor Panchshil Tech Park Yerwada (Near Don Bosco School) Pune - 411 006 Tel: +91 20 6603 6000 Fax: +91 20 6601 5900
Ernst & Young LLP

EY | Assurance | Tax | Transactions | Advisory

About EY

EY is a global leader in assurance, tax, transaction and advisory services. The insights and quality services we deliver help build trust and confidence in the capital markets and in economies the world over. We develop outstanding leaders who team to deliver on our promises to all of our stakeholders. In so doing, we play a critical role in building a better working world for our people, for our clients and for our communities.

EY refers to the global organization, and may refer to one or more, of the member firms of Ernst & Young Global Limited, each of which is a separate legal entity. Ernst & Young Global Limited, a UK company limited by guarantee, does not provide services to clients. For more information about our organization, please visit ey.com.

Ernst & Young LLP is one of the Indian clients serving member firms of EYGM Limited. For more information about our organization, please visit www.ey.com/in.

Ernst & Young LLP is a Limited Liability Partnership, registered under the Limited Liability Partnership Act, 2008 in India, having its registered office at 22 Camac Street, 3rd Floor, Block C, Kolkata - 700016

© 2018 Ernst & Young LLP. Published in India.

All Rights Reserved.

ED None

This publication contains information in summary form and is therefore intended for general guidance only. It is not intended to be a substitute for detailed research or the exercise of professional judgment. Neither Ernst & Young LLP nor any other member of the global Ernst & Young organization can accept any responsibility for loss occasioned to any person acting or refraining from action as a result of any material in this publication. On any specific matter, reference should be made to the appropriate advisor.

