Research Report

Mapping the Digital Entrepreneurship Ecosystem in Sarawak and Understanding Its Impact on Rural Microentrepreneurs

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EXECUTIVE SUMMARY

Malaysia is vigorously advancing its digital transformation, integrating technology into various facets of life, from public service delivery to leveraging digital economic opportunities. This commitment is reflected in both the national Malaysia Digital Economy Blueprint and Sarawak's Digital Economy Blueprint 2030. Numerous initiatives have been launched by government agencies, NGOs, and private companies to promote digital entrepreneurship. To date, there has been no exhaustive mapping of DEIs across the state, leaving a gap in the overview of their scope and reach while risking duplication of efforts and resources. By adopting domains of entrepreneurship ecosystem (Isenberg 2010), we categorise and map existing DEIs on federal and state level to understand the scope of the DEIs supporting Sarawak entrepreneurs. This study aims to achieve three primary objectives: firstly, to map the Sarawak digital entrepreneurial support ecosystem; secondly, to assess the performance metrics of these initiatives; and thirdly, to identify the compatibility of digitalization initiatives focusing on rural microentrepreneurs.

Employing a mixed-method approach involving document reviews and semi-structured interviews, this project seeks to comprehend the scope, reach, specificity, and efficacy of these programs by analysing 50 DEIs from 115 initiatives identified in the ecosystem. Interviews conducted involved policy-makers, implementers, and microentrepreneurs in Sarawak. We found a few patterns of DEIs distribution, firstly, there are generally even distribution of human capital initiatives to all target groups; secondly, there are many funding initiatives for technology and innovation ventures but none for rural digital entrepreneurs, and thirdly, some target groups are neglected in DEI, particularly person with disabilities in all domains of DEIs. We also highlighted the interpersonal relationships between implementer and beneficiaries, role of implementers, and the emergence of ecommerce middleman and training industry in the context of DEI.

Key findings from the research include:

- **Collaborative Ecosystem**: Actors from various sectors—government, NGOs, and private companies—are engaged in complementary collaborations. They manage overlapping efforts by focusing on different niches and sharing expertise on common platforms.
- **Rural Entrepreneurship Focus**: DEIs targeting rural entrepreneurs primarily emphasize human capital development. However, there is a notable absence of financing and initiatives that foster an entrepreneurial culture in rural communities. Rural entrepreneurs face significant challenges, such as higher access costs and lower digital literacy, which are not adequately addressed by current DEIs.
- **Funding Discrepancies**: Most national-level funding for the digital economy supports technology and innovation startups through loans, investments, and equity finance, which are largely inaccessible to rural entrepreneurs. This creates a financial gap that hampers the growth of rural digital entrepreneurship.
- **Digital Adoption and Inclusivity**: Digital adoption among Sarawakian entrepreneurs interviewed mostly limited to social media promotion. More advanced digital practices, such as using online platforms for complete business transactions, are less common. Furthermore, persons with disabilities (OKU) are significantly underrepresented in DEIs, highlighting a gap in the inclusiveness of these initiatives.

- **Access to Infrastructure**: Poor digital infrastructure in rural areas exacerbates the challenges faced by microentrepreneurs. Limited internet connectivity and lack of access to digital tools hinder their ability to fully participate in the digital economy.
- **Training and Skill Development**: While there are numerous training programs aimed at improving digital skills, there is a mismatch between the skills taught and the actual needs of rural entrepreneurs. Many programs do not account for the practical realities and constraints of rural business environments.
- **Market Access and Business Support**: Rural entrepreneurs often struggle with accessing broader markets due to logistical challenges and lack of support networks. Initiatives that facilitate market access and provide business support services are critical but currently insufficient.
- **Policy Implementation Gaps**: There is a disconnect between policy formulation and on-the-ground implementation. Policies designed to promote digital entrepreneurship do not always translate into effective practices, partly due to a lack of involvement from local implementers who understand the unique challenges faced by rural communities.

The promotion of digital entrepreneurship has led to some unintended consequences, such as benefits skewed towards the training industry, mismatches between initiatives and target audiences, and potentially misleading KPI reporting. There is a need to shift from an urban-centric model to one that better caters to rural entrepreneurship, addressing the unique logistical and cultural challenges faced by rural entrepreneurs. This report also suggests empowering ground-level implementers in the strategic planning of DEIs, advocating for bottom-up policy planning to ensure initiatives are contextually relevant and effective.

In conclusion, while Sarawak has made significant strides in promoting digital entrepreneurship, there are critical areas that require attention and improvement. Addressing the financial and cultural gaps for rural entrepreneurs, ensuring inclusivity for all demographic groups, and fostering genuine collaborations between government, NGOs, and private sectors are essential steps forward. Future DEIs should be designed with a nuanced understanding of local contexts, leveraging the insights and experiences of ground implementers to create more impactful and sustainable digital entrepreneurship initiatives.

TABLE OF CONTENTS

LIST OF DIAGRAMS

LIST OF TABLES

GLOSSARY AND LIST OF ABBREVIATIONS

BPEK	Bahagian Pembangunan Ekonomi Komuniti, KKDW
BPES	Bahagian Pembangunan Ekosistem Keusahawanan, KUSKOP
CEDAR	Centre for Entrepreneur Development and Research
CRADLE	Cradle Fund Sdn. Bhd
DEI	Digital entrepreneurship initiative
DI	Digital initiative
EE	Entrepreneurial environment
EI	Entrepreneurship initiative
EP	Educational and Public Involvement
ES	Entrepreneurs and startups
GDAIB	Guangdong AIB Polytechnic
INSKEN	Institut Keusahawanan Negara
KKD	Ministry of Communication & Digital
KKDW	Ministry of Rural and Regional Development
KKM	Kementerian Kesihatan Malaysia
KPWK	Ministry of Women, Early Childhood and Community Wellbeing Development
KUSKOP	Ministry of Entrepreneur Development And Cooperation
MAFS	Ministry of Agriculture and Food Security
MANRED	Ministry of Modernization of Agriculture, Native Land and Regional Development
MATRADE	Malaysia External Trade Development
MCMC	Malaysian Communications & Multimedia Commission
MDEC	Malaysia Digital Economy Corporation
MDV	Malaysia Debt Ventures Berhad
MEWC	Ministry of Water, Energy & Communication
MIDF	Malaysian Industrial Development Finance Berhad

MINTRED	Ministry of International Trade & Industry, Industrial Terminal and Entrepreneur Development
MITI	Ministry of Investment, Trade and Industry
MOSTI	Ministry of Science, Technology, and Innovation
MOTAC	Ministry of Tourism, Arts and Culture
MTEC	Malaysia Technology Development Corporation
NADI	National Information Dissemination Centres
NRDA	Northern Region Development Agency
NTIS	National Technology & Innovation Sandbox
OKU	Orang Kurang Upaya (Person With Disabilities)
PBT	Pihak Berkuasa Tempatan (Local Authority)
PEDI	Pusat Ekonomi Digital
PNB	Permodalan Nasional Berhad
RL	Rural entrepreneurs
SAINS	Sarawak Information Systems
SDEC	Sarawak Digital Economy Corporation
SECA	Sarawak E-Commerce Association
SG	Special group
SMA	Sarawak Multimedia Authority
S PAY	Sarawak Pay
SUTS	Swinburne University of Technology Sarawak
TEGAS	Tabung Ekonomi Gagasan Anak Sarawak
TERAJU	Unit Peneraju Agenda Bumiputera
TI	Technology and Innovation
UNECE	United Nations Economic Commission for Europe
UTS	University of Technology Sarawak
WFDS	Women & Family Department of Sarawak
YPPB	Yayasan Peneraju Pendidikan Bumiputera

1.0 INTRODUCTION

Digital Entrepreneurship as Development Agenda

Sarawak strategic development policies such as Sarawak Digital Economy Strategy (2018-2022) and the Post COVID-19 Development Strategy 2030 enshrined digital transformation of enterprises as a key strategy for the state of Sarawak. The high priority of digitalisation began with the establishment of Sarawak Multimedia Authority (SMA) through the passing of the Sarawak Multimedia Act 2017. Digital development agencies such as the Sarawak Digital Economy Corporation (SDEC), where a plethora of digital initiatives have been executed, were subsequently formed under SMA (SDEC, 2017). The Federal government also offers its range of digital initiatives including the Ministry of Rural Development's Smart Rural Programme (2019), Ministry of Communication and Multimedia Commission (MCMC)'s Pusat Ekonomi Digital (PEDi) and the Prime Minister's Office's One Village One Product (Ngah et al., 2022). These efforts range from facilities constructions (such as rural internet centres, the setting up of digital innovation hubs and connectivity centres), to the implementation of digital entrepreneurship training programmes for entrepreneurs.

A large portion of the federal digital transformation and digital adoption initiatives introduced over the years target micro, small and medium enterprise activities. These initiatives span across governmental, private sector and NGO actors and included a wide range of support programmes (SDEC, 2017; Abdul Ghaffar, 2022). Digital entrepreneurship development initiatives play a significant role in the degree of uptake and patterns of usage of digital technologies, particularly among rural communities (Salemink et al., 2017). As a state made up of a large portion of rural areas, the role of such initiatives to achieve state-wide digitalisation is indispensable.
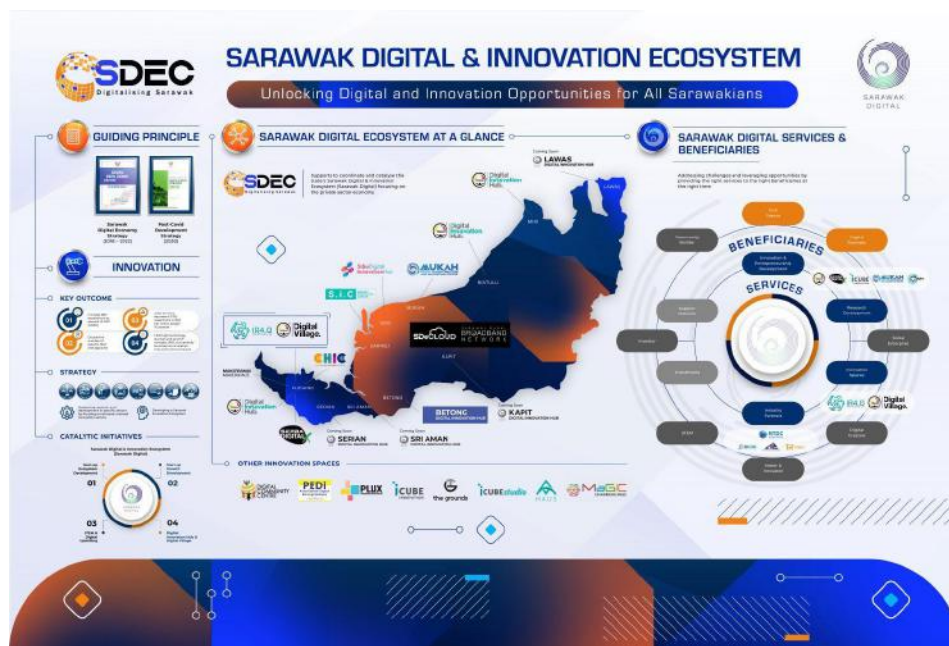
Diagram 1.0 Sarawak Digital and Innovation Ecosystem (Source: SDEC)

Need for Mapping and Critical Review

However, despite the growing importance of digital entrepreneurial development initiatives, a more comprehensive mapping and assessment of the public, non-public, and private sector programming is still required. The 12th Malaysia Plan (12MP) Mid-Term Review (MTR) identified agency duties and functions overlaps as a major issue. This scenario may be made more pronounced at the state level through the functions of local agencies. Prime Minister Anwar Ibrahim's call for a single window initiative for startup ecosystem[1] can be inferred as an indication to streamline government efforts for entrepreneurs, an effort that requires a preceded mapping.

The mapping and critical examination of federal and state initiatives is necessary to assess their coverage, identify any overlaps, and determine how successfully these initiatives are reaching entrepreneurs on the ground, particularly vulnerable rural businesses. The principal objective of this research proposal is to bridge the existing knowledge gap by conducting an ecosystem assessment and mapping of digital entrepreneurship in Sarawak, gaining access to the KPIs of these initiatives, and determining the effectiveness of aiding rural micro entrepreneurs in their digital transformation.

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[1]https://www.nst.com.my/news/nation/2023/08/948395/pm-anwar-single-window-initiative-will-be-implemented-strengthen-startup

Objectives of the Study

This study seek to fulfill three research objectives:

- Map and document the existing digital entrepreneurial ecosystem in Sarawak to examine the scope of coverage, areas of overlap efforts, and opportunities for collaboration.

- Understand and evaluate the projects' performance indicators

- Assess the efficacy of these initiatives in reaching rural entrepreneurs, particularly those in underserved areas, and identify potential strategies for improvement.

Through the accomplishment of these objectives, the research hopes to contribute to the body of knowledge regarding digital entrepreneurial ecosystems, provide policymakers and stakeholders with useful information, and encourage evidence-based decision-making to boost the effectiveness and influence of these initiatives in Sarawak.

2.0 LITERATURE REVIEW

2.1 Entrepreneurial Ecosystem

Daniel Isenberg, a pioneering researcher at Babson College, defines the entrepreneurial environment (EE) as "a set of individual elements – such as leadership, culture, capital markets and open-minded customers – that combine in complex ways" (2010). Stam (2015) defines entrepreneurial ecosystems as "a set of interdependent actors and factors that are mutually reinforcing in such a way as to facilitate entrepreneurial activity" when considering EE within the framework of regional policy. By describing entrepreneurship using natural science term "ecosystem", the approach to entrepreneurship as a community of interdependent actors and taking into account the roles of a larger external context that either supports or inhibits entrepreneurship extending beyond individual's actions and behaviours (Stam, 2015).

The United Nations Economic Commission for Europe (UNECE) has highlighted five major obstacles for SMEs in transition economies. These obstacles relate to both the businesses themselves and more general structural issues. These include the friendliness of regulatory and institutional framework to businesses, ease of both local and international market access, rigour of innovative culture or systems, ease of access to finance and technology and quality of human capital (UNECE, 2022). According to Khan (2013), SME effectiveness in developing nations arises from integration of their support and entrepreneurial operations at the strategic (policy-level), instructional (supporting organisations) and enterprise (companies-level) levels.

A number of EE frameworks have been advanced. Isenberg (2010) presented **six major domains for the ecosystem of entrepreneurship**, including *policy*, *markets*, *human capital*, *support*, *culture*, and *finance*. Each of these areas form a holistic entrepreneurship ecosystem which ensures the growth of the entrepreneurship ecosystem. Mujahid et al. (2019) later put up a distinct approach that emphasises the significance of every dimension to the EE. They synthesised and prioritised the eight EE dimensions - human resource development, finance, support, industry network relationships, government role, infrastructure, mentorship, and markets - based on a systematic review and expert questionnaire (Mujahid et al., 2019). While various other dimensions have been further suggested to understand business ecosystem (such as Bejjani et al., 2023, Elia et al., 2020, Stephens et al. 2022, Sussan & Acs, 2017), Isenberg's domains presented an optimal model for our adoption to categorise the variety of initiatives on our exploratory-level research.

2.2 Digital Entrepreneurial Initiatives

Digital entrepreneurship cannot be perceived simply as brick and mortar commerce transposed onto the digital world. It is characterised and shaped by different sets of norms, practices, skills and know-hows. It has potential for disrupting existing business models, such as the effect of digital based businesses such as Uber and Airbnb on conventional taxi and hotel industries. Similarly, the understanding towards digital entrepreneurial initiatives should take into consideration its difference from conventional entrepreneurial assistance.

Digital entrepreneurship ecosystem can be understood through dimensions such as its digital actors, digital activities, digital motivations and digital organisation (Elia, Margherita & Passiante, 2020). However, for the purpose of this research, we focus on the range of within the subsets of entrepreneurship initiatives and digital initiatives as proximate to digital entrepreneurship initiatives as they were defined by previous literature;

> **Entrepreneurship Initiative (EI):** Initiative that advocates for entrepreneurship in general, identifying opportunities or the creation of new ones to develop and commercialize new products and services (Hitt, 2001).

> **Digital Initiative (DI):** Initiative that focuses on digitalisation programmes: self-organizing, scalable and sustainable system composed of digital entities and their interrelations to increase system utility, cooperation and innovation (Li, Du and Yin, 2017)

> **Digital Entrepreneurship Initiative (DEI)**: Initiative that focuses on the sub-category of digital entrepreneurship that supports the digitalisation of some or all of what would be physical in the traditional settings using digital technology, or the creation of and transformation of existing business using novel digital technology. (Davidson and Vaast, 2010; European Commission, 2015; Zhao and Collier, 2016).

The differentiation of the initiatives as defined above is useful to categorise and focus our research on DEIs while keeping aware of the larger ecosystem in which DEIs are located within. The definition of DEI above includes elements of EI and DI while taking into account the range of transformation of traditional commerce with the introduction of existing or new digital technology.

2.3 Rural Entrepreneurship

Entrepreneurship is seen as a promising economic activity to alleviate communities from low income, and thus should be encouraged as much as possible, including to rural communities. On a general definition, rural entrepreneurship can be defined as entrepreneurship that is located in rural areas. However, the effort to define rural entrepreneurship as a research operational definition reveals the complexity of capturing what it is. We can first attempt to understand what is the meaning of rural (luar bandar) according to its ministry; Ministry of Rural and Regional Development or KKDW (previously Ministry of Rural Development or KPLB). KKDW (2019) defines rural as:

> "Rural area refers to an area that is outside of the urban area as defined by Department of Statistic Malaysia and an area that is outside of the operational territory of the local authority (PBT)"

> "Village in an urban area (PBT) that has a population of less than 10,000 people but is outside of PBT operation area is included in the definition of rural"

> "Rural areas also include settlers, estates and new village settlements located outside of PBT operational area"

Rural is defined as the inverse of urban, as outside of a PBT and as having a lesser population (below 10,000). The definition of rural can also be contrasted to remote areas, defined as areas with a population of less than 50 per kilometre square. Rural settlements include categories such as town (pekan), village growth centre (pusat pertumbuhan desa) and village (kampung). Numerically, there are about 5,976 villages in Sarawak (KKDW 2019). Thus rural entrepreneurship by definition is entrepreneurship that operates in less populated areas outside and on the fringes of urban areas.

One of the primary questions amongst scholars researching rural entrepreneurship as a subject matter is whether it assumes a different unit of analysis or as a form within general entrepreneurship, while situated in a rural setting (Fortunato 2014, Gaddefors & Anderson 2018). Gaddefors & Anderson (2018) argued against the romanticism of rural entrepreneurship and suggested instead that approaching rural entrepreneurship as one context out of a 'pool', on par with other context such as youth-, women- or ethnic-entrepreneurship

Rural entrepreneurship literature highlighted a list of its issues and challenges which includes its funding and cost (Fabeil 2013, Fabeil et al., 2017, Fortunato 2014, Man 2010), promotional capabilities (Man 2010), skilled labour (Fabeil et al., 2017 Fortunato 2014), access to infrastructure, support (Fabeil 2013, Fabeil et al., 2017). Fortunato (2014) also highlighted some additional rural entrepreneurship challenges from literature he reviewed which include; culture, geographical remoteness, low population (smaller customer base) and lopsided power relationship (between urban and rural business ends) all of which can be presumed as universal challenges to sensitise our research observations. While some of the literature also discusses the 'internal' factors that affect entrepreneurship - such as the values, beliefs, personality, attitude and culture of individual entrepreneurs, it is not within our focus for this research.

3.0 METHODOLOGY

3.1 Framework

DOMAIN OF THE ENTREPRENEURSHIP ECOSYSTEM

LEADERSHIP
- Unequivocal Support
- Social Legitimacy
- Open Door For Advocate
- Entrepreneurship Strategy
- Urgency, Crisis And Challenge

GOVERNMENT
- Institutions (e.g: investment, support)
- Financial Support (e.g: for R&D, jump-start fund)
- Regulatory framework incentive (e.g: tax benefits)
- Research institutes
- Venture-friendly legislation (e.g: Bankruptcy, contract enforcement, property right and labour)

EARLY CUSTOMER
- Early adopters for proof-of-concept
- Expertise in productizing
- Reference customer
- First reviews
- Distribution channels

FINANCIAL CAPITAL
- Micro-loans
- Angel investors
- Friends and family
- Zero-stage venture capital
- Venture capital funds
- Private equity
- Public capital markets
- Debt

POLICY

MARKET

FINANCE

NETWORK
- Entrepreneur's networks
- Diaspora networks
- Multinational corporations

ENTREPRENEURSHIP

SUCCESS STORIES
- Visible successes
- Wealth generation for founders
- International reputation
- Societal norms

LABOUR
- Skilled and unskilled
- Serial entrepreneurs
- Later generation family

HUMAN CAPITAL

CULTURE

EDUCATIONAL INSTITUTION
- General degrees (professional and academic)
- Specific entrepreneurship training

SUPPORT

SOCIETAL NORMS
- Tolerance of risk, mistakes, failure
- Innovation, creativity, experimentation
- Social status of entrepreneur
- Wealth creation
- Ambition, drive, hunger

INFRASTRUCTURE
- Telecommunications
- Transportation & logistics
- Energy
- Zones, incubation centers, clusters

SUPPORT PROFESSION
- Legal
- Accounting
- Investment bankers
- Technical experts, advisors

NON-GOVERNMENT INSTITUTION
- Entrepreneurship promotion in non-profits
- Business plan contests
- Conferences
- Entrepreneur-friendly associations

Diagram 3.1a Isenberg (2010) entrepreneurship ecosystem domains

The mapping exercise requires the classifications of DEIs, differentiated from the EI and DI as defined in 2.2, identified from the desk study. The DEIs were subsequently categorised according to the entrepreneurship assistance that they provide, by adopting Isenberg's entrepreneurship ecosystem domains (Diagram 3.1a above) to the context of digital entrepreneurship (see Table 3.1b below).

Domains	Operational Definition
Digital Entrepreneurship Policies	Government policies for digital entrepreneurship, intellectual property rights, data protection and cybersecurity regulations.
Digital Entrepreneurship Culture	Focuses on fostering a culture of innovation and risk-taking. Nurturing an entrepreneurial mindset, and sharing of expertise in the digital economy.
Digital Support and Infrastructure	Comprehensive support for digital entrepreneurs, including incubators, accelerators, mentors, networking opportunities and shared workspaces.
Digital Market Access	Provisioning of digital marketplaces, e-commerce infrastructure and the facilitation of both local and global market reach for digital entrepreneurship.
Digital Human Capital	The development and upskilling of the digital workforce through collaboration between academia and industry, offering access to training and continuous learning.
Digital Finance and Investment	Encompasses access to venture capital, angel investors, crowdfunding platforms, government incentives, and a favourable investment environment for digital ventures.

Table 3.1b Operational definition of Digital Entrepreneurship Initiatives (DEIs) as adopted from Isenberg (2010) entrepreneurship domains

The classification of the DEIs according to the domains provides groupings that will be further analysed. The categorisation of DEI domains on the initiatives initiated on both national and state levels enables us to observe areas in which these efforts are both over and under-represented in the promotion of digital commerce. The classification is not mutually exclusive as initiatives can be classified as providing more than one type of support. The inherent belief within this framework is the more types of initiatives provided, the more the uptake and chances for digital entrepreneurship to be successful.

3.2 Data Collection

This research employs a mixed method combining desk study and structured interviews. The data obtained from both methods were cross-referenced iteratively to enhance their reliability and validity. We will discuss both of the methods in turn.

3.2.1 Desk Study

A mapping exercise was done over information that can be obtained online. The research team combed through the internet for entrepreneurship and digital initiatives both by

government and non-governmental organisations, resulting in a list of 150 initiatives. The compiled listing was then scrutinised and divided according to three categorisations, namely **entrepreneurship initiative (EI)**, **digital initiative (DI)** and **digital entrepreneurship initiative (DEI)**; as discussed in section 2.2 above. The categorisation of initiatives guided by the definitions above allows the team to not only identify DEI focused by the study, but also DI and EI that similarly exist in the same ecosystem as the former.

Fifty DEIs were identified from the initial listing of initiatives (see Appendix). The DEIs were subsequently categorised according to its scope of digital entrepreneurship assistance (according to the six DEI domains framework) according to their respective descriptions online. The DEIs were then approached for structured interviews to gather more information on their implementation.

3.2.2 <u>Structured Interview</u>

Primary data collection was done by conducting structured interviews with DEI initiators/implementers and their beneficiaries. A list of interview questions to capture our research inquiry was prepared for both initiators (implementers) and entrepreneurs (beneficiaries) respectively. The recruitment of participants for this research employs a mixed method. The recruitment of initiators was done through 'cold calling', by sending invites to all 50 identified DEIs. The research team approached agencies identified during our desk study through their contact information stated online. Invitation to participate was sent to the agencies and the interviews were conducted amongst consenting agencies. A total of seven agencies, some of which were categorised under more than one DEI category consented and were interviewed accordingly.

The recruitment of beneficiary entrepreneurs was done cascadingly from the list of DEI. The DEI implementers who were interviewed were requested to refer a few of their beneficiaries to be interviewed. A total of seven entrepreneurs referred were subsequently interviewed.

The interviews were done either through online conferencing or face-to-face in English or Bahasa Melayu. Upon consent, the interviewees were provided a set of documents containing a project introduction, consent form and list of interview questions , in which they were given time to study and to return the signed consent. The interviews generally lasted about 60 minutes and were recorded and transcribed for further analysis. The transcripts were edited for brevity while interviews done in Bahasa Melayu were also translated to English.

3.3 Data Analysis

Data analysis in this research involved cross-referencing between the desk and empirical data. Various methods were used in making sense of the data, primarily through cross-tabulation of the desk research data and thematic analysis of the interview transcriptions.

The analysis of desk study's data involved cross-tabulation of categorical variables. For the desk study, the six DEIs domains (Table 3.1b) were designated as the primary variables. The DEI categories were compared against other variables including; intra- and

inter-initiators, level of governance (either federal or state) and target groups. Target groups classification was proposed from our preliminary desk study analysis, which we grouped and divided by six (see Table 3.3 below).

Target Group Categories	Inclusion
Entrepreneurs & Startups (ES)	Startups, Craft entrepreneurs, Food entrepreneurs, Social Enterprise
MSMEs (MS)	SME, microenterprises, local businesses
Rural Entrepreneurs (RL)	Rural entrepreneurs, youth from rural communities
Technology & Innovation (TI)	Technopreneurs, tech startups
Educational and Public Involvement (EP)	University students, university staff, university graduates, public
Special Groups (SG)	B40 Women, Bumiputera entrepreneurs, Bumiputera SMEs, women entrepreneurs, low-income households

Table 3.3 DEI Target Groups

Table 3.3 elaborates on the inclusion of niche groups under the six target group categories used for data analysis. While some of the groups are fairly proximate, there are some others such as EP and SG that are lumped together for their shared commonalities.

The analysis of the desk data uses a general cross-tabulation method, which was employed to examine the relationship between two categorical variables (DEI domains, target groups, federal/state). This method is useful for identifying patterns, trends, or dependencies within the data set. The figures obtained from the cross-tabulations of the variables formed the basis for the discussion of how and why variations exist between the categories. By comparing the frequency or distribution of values across different categories, we gained insights on the association between variables and discerned any potential correlations. The contrasting of the variables reveals, on one hand, the intensity of some effort and the lack thereof in others.

The analysis of the empirical data from interviews involves a systematic process to identify and understand emerging themes. The interview transcripts were initially reviewed carefully to familiarize the research team with the content. Then, a process of open coding was employed, where relevant phrases or sentences were assigned descriptive labels. This allows for the generation of initial codes without predefined categories. Subsequently, these codes were organized into potential themes through a process of axial coding, highlighting relationships and connections between different codes. These themes were compared and refined frequently to ensure they accurately capture the essence of the data. The themes were reviewed and revised iteratively to enhance their reliability and validity.

We subsequently engaged in selective coding by prioritizing the most significant and representative themes. Throughout our analysis, constant reflexivity and documentation were crucial to maintain transparency and rigour. The final step involves presenting the emergent themes in a coherent narrative, providing valuable insights into the underlying patterns and perspectives within the interview data.

4.0 FINDINGS

Digital economy policies assume the highest level of governance that enable and support DEIs. Nine policies relevant to digital entrepreneurships were identified from our study, with seven on national level and two from Sarawak state. The policies are summarised in Diagram 4a below;

Diagram 4a State and federal policies that support Digital Entrepreneurship

The Sarawak state pioneered digital economy policy with its Sarawak Digital Economy Strategy 2018-2022 (not listed above), which was subsequently replaced by Sarawak Digital Economy Blueprint 2030. The national policy on digital economy, Malaysia Digital Economy Blueprint was launched subsequently in 2021 during Prime Minister Muhyiddin Yassin's administration. Niche policies such as the National eCommerce Strategic Roadmap were launched as early as 2016. Other policies listed above included portions on digital entrepreneurship as a constituent of their policies focusing on entrepreneurship, tourism, rural development, digital revolution, nation-wide and statewide economic planning. The practice of placing digital entrepreneurship as a subset to other policies is one of our primary observation which we will delve deeper- in section where initiatives reporting are concerned. headings

Policy **serves as a prerequisite for the implementation of other DEIs**. DEIs involve a variety of actors including *initiators* on a higher level of governance to *implementers* who carry out the initiatives. While numerically the number of DEIs promoting the digital market is considerably high, the analysis on its initiators showed the involvement of a variety of

governmental agencies. The DEI initiators and the number of their initiatives from both federal and Sarawak state government are summarised in Table 4b and Table 4c below;
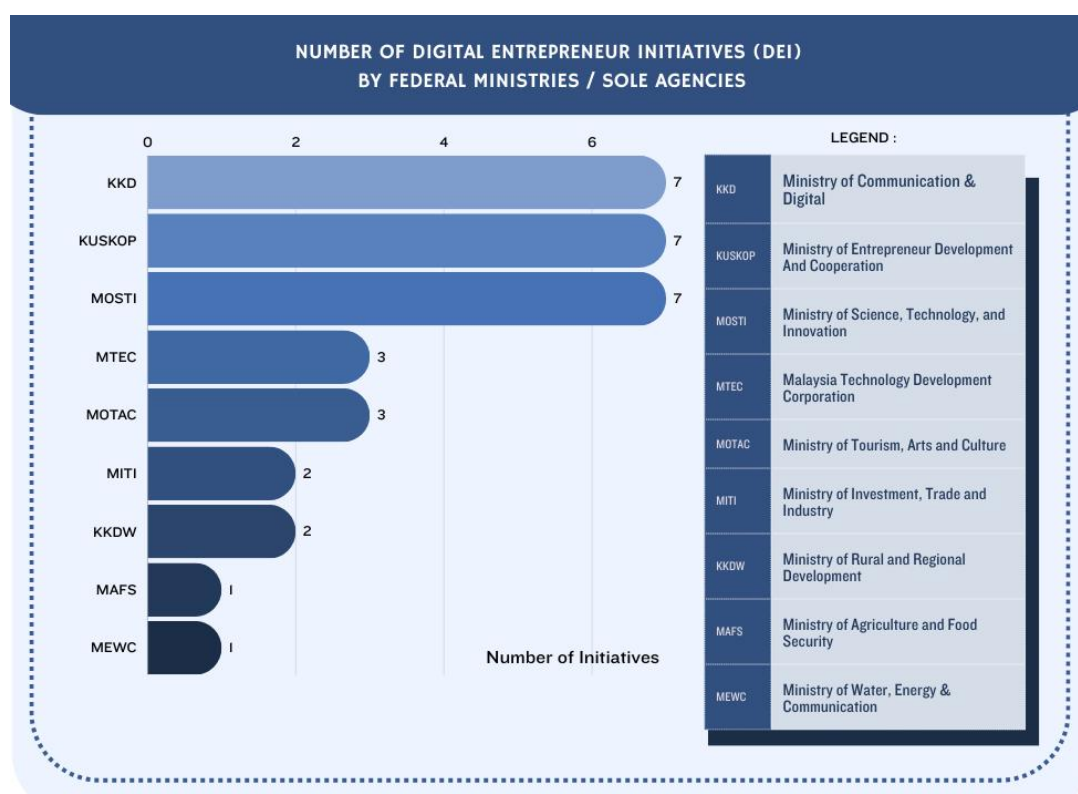

NUMBER OF DIGITAL ENTREPRENEUR INITIATIVES (DEI) BY FEDERAL MINISTRIES / SOLE AGENCIES

Agency	Number of Initiatives
KKD	7
KUSKOP	7
MOSTI	7
MTEC	3
MOTAC	3
MITI	2
KKDW	2
MAFS	1
MEWC	1

LEGEND:

KKD	Ministry of Communication & Digital
KUSKOP	Ministry of Entrepreneur Development And Cooperation
MOSTI	Ministry of Science, Technology, and Innovation
MTEC	Malaysia Technology Development Corporation
MOTAC	Ministry of Tourism, Arts and Culture
MITI	Ministry of Investment, Trade and Industry
KKDW	Ministry of Rural and Regional Development
MAFS	Ministry of Agriculture and Food Security
MEWC	Ministry of Water, Energy & Communication

Diagram 4b Federal DEI initiator agencies and their number of initiatives

Ministries responsible for 'digital' and 'entrepreneur' have the most initiatives. Among the initiators, Ministry of Communication and Digital (KKD), Ministry of Entrepreneur Development and Cooperatives (KUSKOP) and Ministry of Science, Technology and Innovation (MOSTI) topped the list with seven initiatives respectively (see Diagram 4b above). As differentiated by our definition of DI, EI and DEI, DEI is in essence a nexus between digital and entrepreneurship. This is reflected by initiatives initiated by ministries' with wide ranging portfolios. Naturally, ministries responsible for 'digital' (KKD) and 'entrepreneur' (KUSKOP) have the most initiatives promoting DEIs. Ministry of Science, Technology and Innovation's (MOSTI) appearance as the third prominent actor is consistent with the close relation of the ministry's portfolio with digital technology and entrepreneurial ventures.
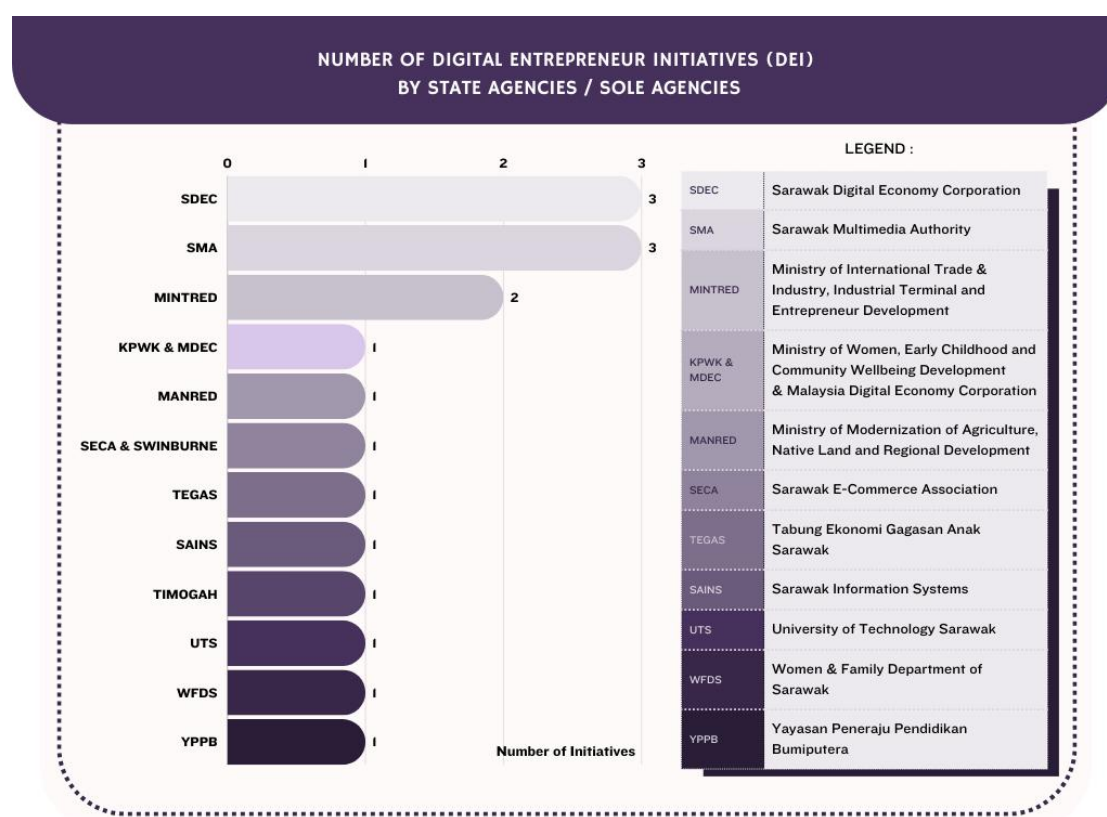
Diagram 4c State DEI initiator agencies and their number of initiatives

State digital economy statutory agency and state government-linked company takes the lead in Sarawak. DEIs in Sarawak are led by the likes of Sarawak Digital Economy Corporation (SDEC) and Sarawak Multimedia Authority (SMA), both with three DEIs respectively. The rest of the state's DEIs with one initiative each (except MINTRED with two initiatives) are from a mix of actors from ministries, native development foundations, universities, and private businesses.

Most of the DEIs were brought into realisation through *implementers*, intermediary actors that carry out initiatives on the ground while connecting the initiators with the beneficiaries (see Table 4d and 4e below). Implementers' roles can be filled by governmental agencies or private entities. Both federal and state DEIs were led by bodies established specifically to promote digital economy, Malaysia Digital Economy Corporation (MDEC) and Sarawak Digital Economic Corporation (SDEC) with six and four initiatives respectively. There were a few more prominent actors in the ecosystem representing specific roles. Cradle Fund Sdn Bhd, an agency incorporated under the federal Ministry of Finance and administered by the Ministry of Science, Technology and Innovation (MOSTI), implements four DEIs with its mandate to fund high-calibre tech startups. It is followed by Kraftangan Malaysia, Malaysia Debt Venture (MDV) and SME Corp with three DEIs each on their respective niche focus in the crafts, ICT sector and small and medium enterprises. It is noteworthy to observe that aside from agencies established to promote general digital economy, federal incorporated funding agencies such as Cradle and MDV have a significant presence as DEIs implementers to explore equity investment.

NUMBER OF DIGITAL ENTREPRENEUR INITIATIVES (DEI) BY IMPLEMENTING FEDERAL AGENCIES

	Number of Initiatives
MDEC	7
CRADLE	4
KRAF MSIA	3
SME CORP	3
MDV	3
MTEC	2
MFDB	1
BPES	1
INSKEN	1
MCMC	1
MDEC, CEDAR	1
NTIS	1
MATRADE	1
MIDF	1
KKDW	1
BPEK	1
KKM & PNB	1

LEGEND:

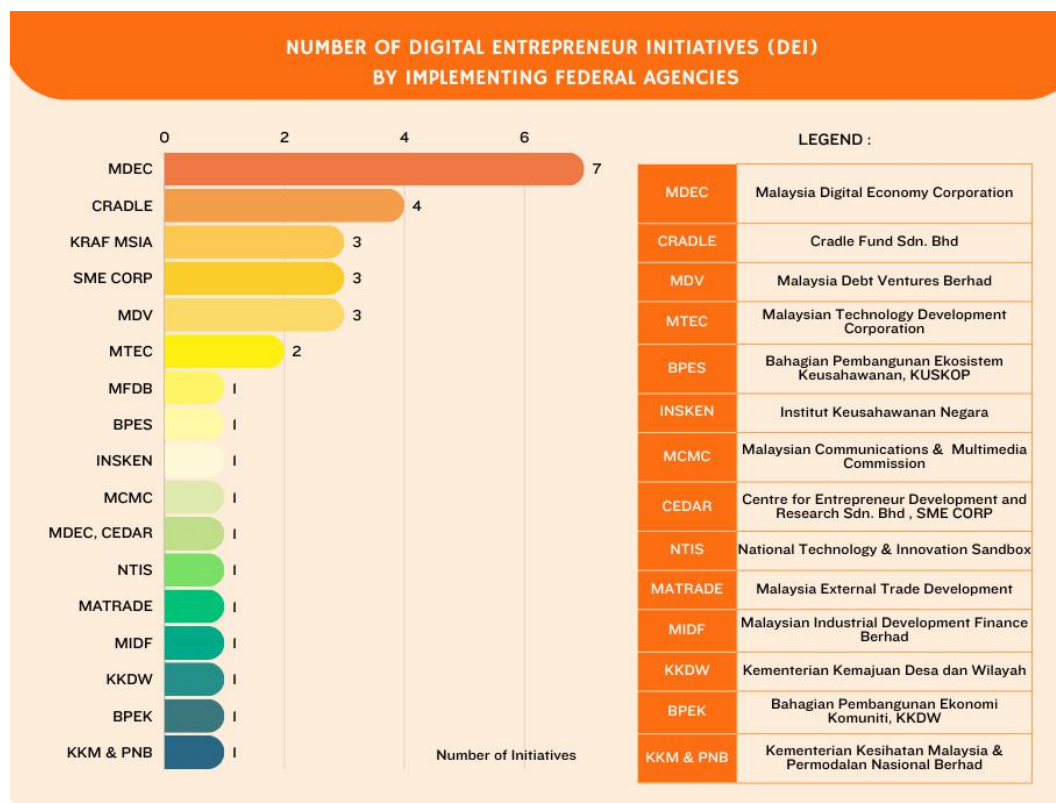|	
MDEC	Malaysia Digital Economy Corporation
CRADLE	Cradle Fund Sdn. Bhd
MDV	Malaysia Debt Ventures Berhad
MTEC	Malaysian Technology Development Corporation
BPES	Bahagian Pembangunan Ekosistem Keusahawanan, KUSKOP
INSKEN	Institut Keusahawanan Negara
MCMC	Malaysian Communications & Multimedia Commission
CEDAR	Centre for Entrepreneur Development and Research Sdn. Bhd , SME CORP
NTIS	National Technology & Innovation Sandbox
MATRADE	Malaysia External Trade Development
MIDF	Malaysian Industrial Development Finance Berhad
KKDW	Kementerian Kemajuan Desa dan Wilayah
BPEK	Bahagian Pembangunan Ekonomi Komuniti, KKDW
KKM & PNB	Kementerian Kesihatan Malaysia & Permodalan Nasional Berhad

Diagram 4d Federal initiatives implementers and their number of initiatives

There are two more agencies with two DEIs; federal Malaysian Technology Development Corporation (MTDC) and state Tabung Ekonomi Gagasan Anak Sarawak (TEGAS) with two DEIs each. Both agencies have differing segments; MTDC focuses on technology commercialisation in Malaysia while TEGAS focuses on technical and vocational education and training (TVET) for Sarawakians. The rest of the implementers on both federal and state levels with one DEI each consisting mostly of government agencies in a top-down policy implementation fashion, in which agencies carry out initiatives initiated on the ministerial level. The involvement of university (Swinburne & UTS), state GLC (Sarawak Pay and SAINS) and private company (The Hills) is also a notable feature of the DEIs in Sarawak.

NUMBER OF DIGITAL ENTREPRENEUR INITIATIVES (DEI) BY IMPLEMENTING STATE AGENCIES

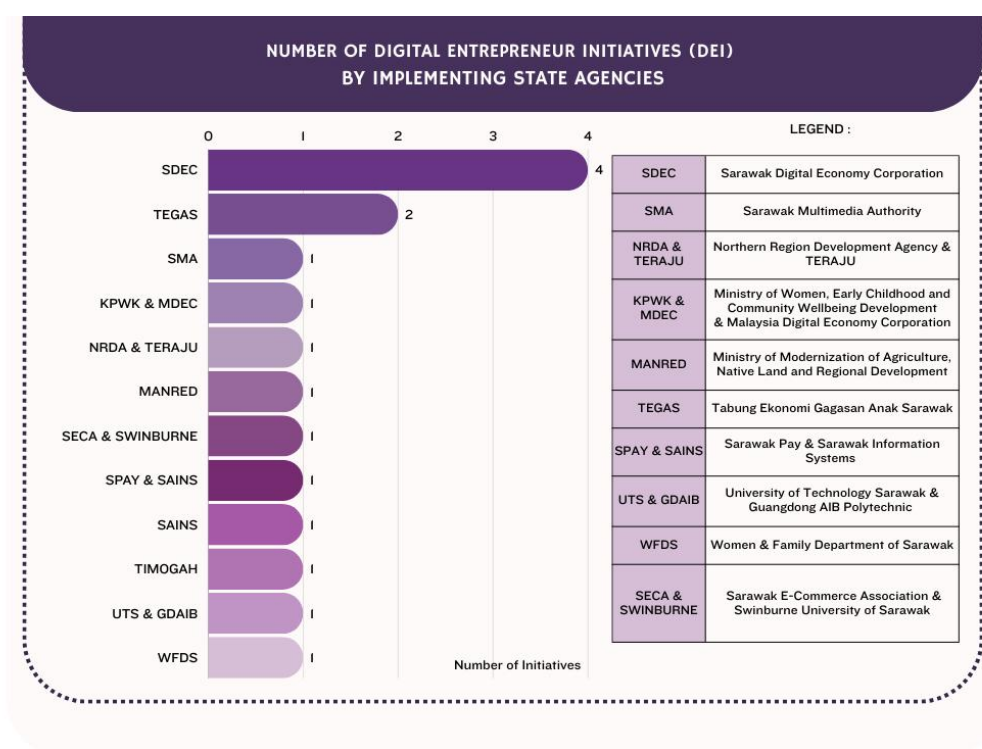| LEGEND:	
SDEC	Sarawak Digital Economy Corporation
SMA	Sarawak Multimedia Authority
NRDA & TERAJU	Northern Region Development Agency & TERAJU
KPWK & MDEC	Ministry of Women, Early Childhood and Community Wellbeing Development & Malaysia Digital Economy Corporation
MANRED	Ministry of Modernization of Agriculture, Native Land and Regional Development
TEGAS	Tabung Ekonomi Gagasan Anak Sarawak
SPAY & SAINS	Sarawak Pay & Sarawak Information Systems
UTS & GDAIB	University of Technology Sarawak & Guangdong AIB Polytechnic
WFDS	Women & Family Department of Sarawak
SECA & SWINBURNE	Sarawak E-Commerce Association & Swinburne University of Sarawak

Diagram 4e Federal initiatives implementers and their number of initiatives

The brief introduction to the policy, initiators and implementers of DEIs in this section provides a general picture of the policies and actors in the digital entrepreneurship ecosystem. We noted that even on higher-level of governance (in policy and establishment of agencies) there are common areas that can either be defined either as overlaps or shared interests.

4.1 Study 1 Scope of Coverage, Areas of Overlap Efforts and Opportunity for Collaboration

Initiative's domains are categorised into six groupings by adopting entrepreneurship ecosystem domains (Isenberg 2010) as our framework; Digital Entrepreneurship Policies (henceforth *policy*), Digital Entrepreneurship Culture (henceforth *culture*), Digital Support and Infrastructure (henceforth *support*), Digital Market Access (henceforth *market*), Digital Human Capital (henceforth *human capital*); and Digital Finance and Investment (henceforth *finance*). We began by looking into the federal and state initiatives by the domains (see Table 4.1a in the next page);
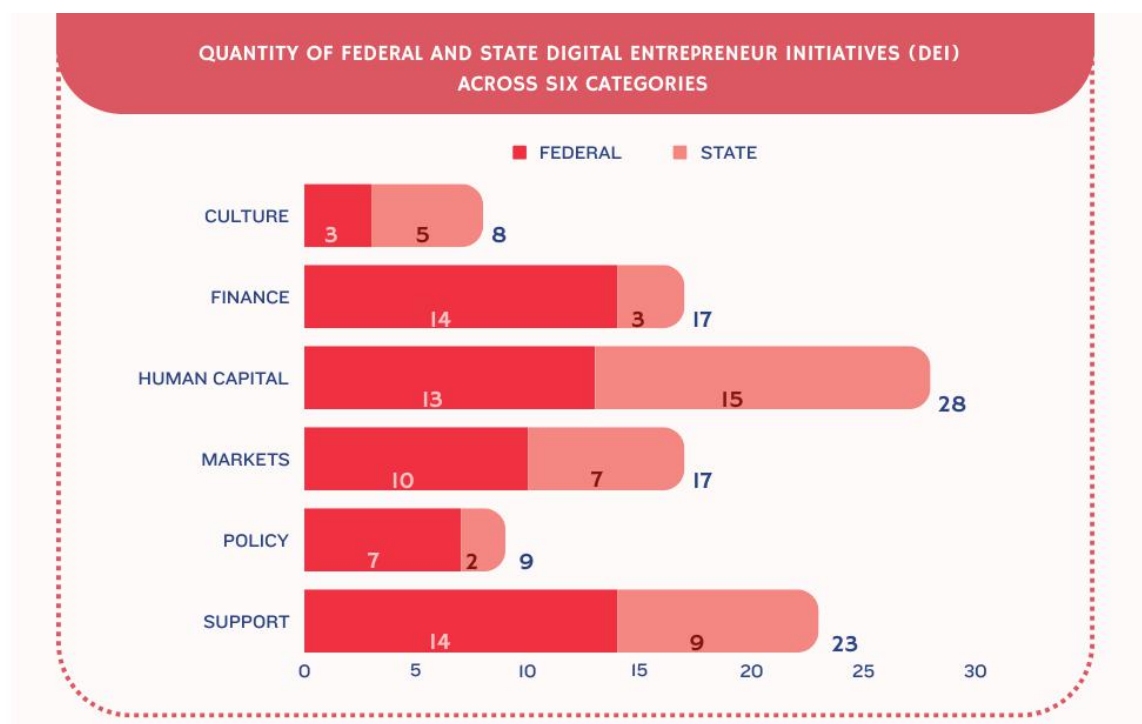
QUANTITY OF FEDERAL AND STATE DIGITAL ENTREPRENEUR INITIATIVES (DEI) ACROSS SIX CATEGORIES

■ FEDERAL   ■ STATE

Category	Federal	State	Total
CULTURE	3	5	8
FINANCE	14	3	17
HUMAN CAPITAL	13	15	28
MARKETS	10	7	17
POLICY	7	2	9
SUPPORT	14	9	23

Diagram 4.1a Quantity of Federal and State DEI across six categories

A glance over Table 4.1a reveals the tendencies of the two levels of governance. *Human capital* initiatives top the list, with a total of 28 initiatives, made up from federal's 13 and state's 15 initiatives. This is followed by provision of *support* with a total of 23 initiatives with 14 and 9 initiatives from federal and state respectively. *Finance* and *market* initiatives, both with a total of 17 initiatives respectively followed by eight *culture* initiatives. The state devised much effort towards the entrepreneurship enculturation by its emphasis on *human capital*, *support* and *culture* initiatives while proportionately lacking in other domains in comparison to federal initiatives.

The provision of *human capital* DEI to train entrepreneurs is coherent as the entry point of individuals towards business ventures. The Sarawak state outnumbered the federal government in this category. As a DEI often paired with *human capital*, *support* DEI with its purpose to provide mentors, workspace, networking opportunities aside from other forms of assistance appeared second. Sarawak state's focus on entrepreneurship enculturation through its Digital Innovation Hub, Digital Kenyalang and TEGAS programmes is also apt as its narrower state-level setting is more intimate for enculturation compared to federal's nation-wide initiatives. This could be a possible indication for the federal administration to work with their state counterparts to ensure more intimate and culturally-appropriate entrepreneurship enculturation.

It is interesting to note the federal government's focus on *finance* and *support* DEIs (14 respectively) surpassing other categories. Most of these were provided through startup and technology and innovation focused programmes. The Sarawak state lacks DEI *financing,* while both federal and state have lesser emphasis on *culture* DEIs in comparison with other domains. We consider the total of nine (9) policies related to digital entrepreneurship as sufficient, as from Sarawakian's perspective, all the policies cover the promotion of digital entrepreneurship for the state.

17

It is important to note that the total numbers in each category indicated in Diagram 4.1a do not indicate the sum of exclusive initiatives as some initiatives encompassed more than one DEI domain, such as Sarawak's Kamek Digital and Digital Innovation Hub or federal's Pusat Ekonomi Digital (PEDi) and MyStatup Bootcamp that provides both *human capital* training and entrepreneur's *support*. Some initiatives provide up to three types of DEI assistance, which we have listed in Table 4.1b below..

Domains	Initiatives
Human Capital, Market, Support	MYStartup Bootcamp (federal)
	Kamek Digital (state)
	SAGO incubator (state private)
Human Capital, Support & Culture	Digital Innovation Hub (state)
	TEGAS tech immersion programme (state)
Support, Culture, Finance	MYStartup Pre-Accelerator (federal)

Table 4.1b Examples of initiatives supporting multiple domains

Aside from domains, DEIs are equally defined by their target groups. Entrepreneurship is seen as an income generation avenue that the government bank on for underserved community (single mothers, persons with disabilities, youth, microentrepreneurs and natives, among others) to improve their financial standing, as evident from previous Budget Madani 2024's RM44bil allocation for entrepreneurship funding assistance. However, most of these aids for entrepreneurship do not fall into our research scope that focuses solely on digital entrepreneurship and does not constitute a neglect of the target groups discussed. Thus the following discussion on DEIs' target groups should be read with the context in mind.
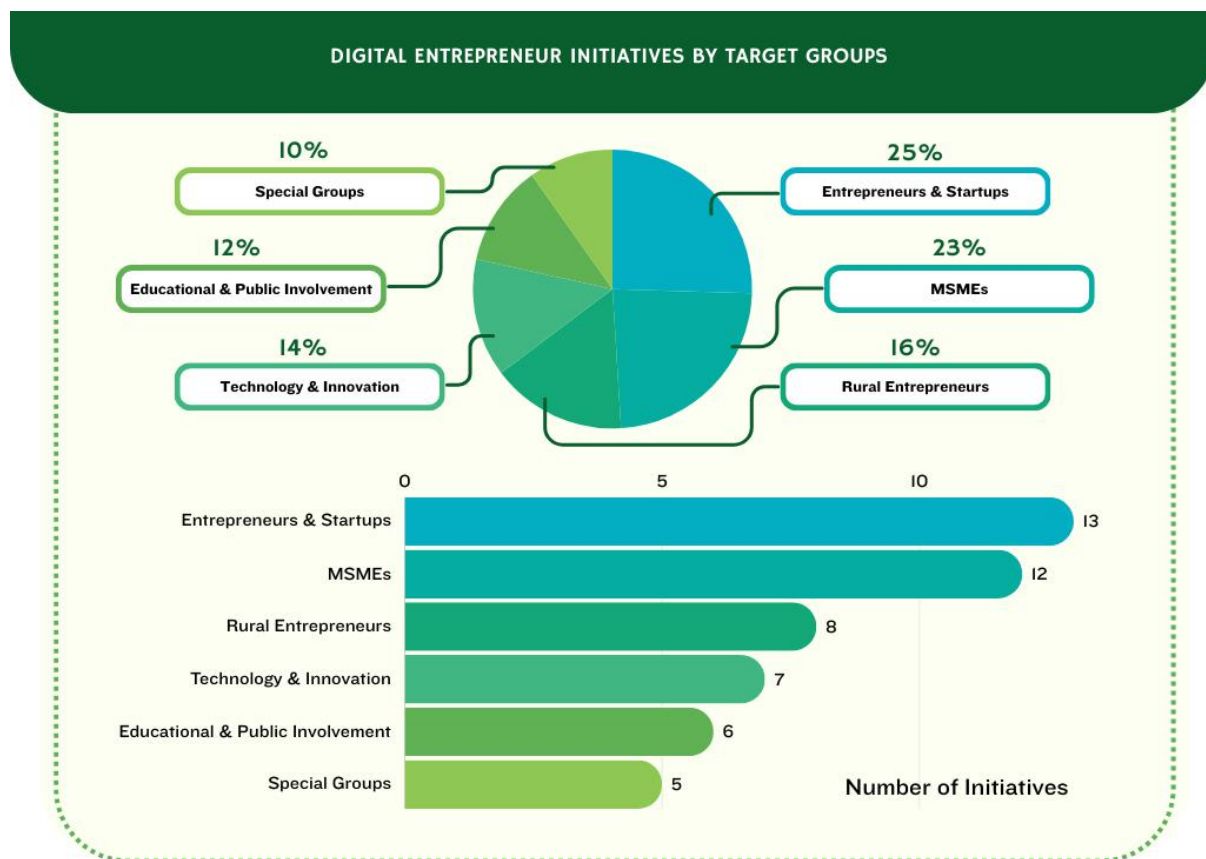
Diagram 4.1c Initiative Target Groups

Diagram 4.1c above exhibits groups targeted by the DEIs. Entrepreneurs and startup (ES) group is the unsurprising top DEIs targeted beneficiary with 13 initiatives (25 percent), followed closely by MSMEs (MS) with 12 initiatives (23 percent). The focus of this research, rural businesses (RL) is third with eight initiatives (16 percent) behind the business groups, followed by Technology & Innovation (TI), Educational and Public Involvement (EP) and Special Groups (SG) with seven, six and five initiatives respectively. While numerically lesser compared to the first two groups, RL as a group are relatively better compared to other niche special groups (women and low-income groups).

There are a few notable observations from analysing the intragroup within target groups. For example, within the MS group, DEIs are generally targeted at Small and Medium Enterprises, while there is one dedicated DEI for microenterprises and local businesses. For the ES group, there are interestingly three DEIs that benefit craft entrepreneurs compared to one for food entrepreneurs and social enterprises respectively. While there are dedicated DEIs for low-income groups/B40, bumiputera, women, rural community, local businesses and their intersections (youth in rural communities), there is none found for persons with disabilities (*Orang Kurang Upaya* or OKU). Like other underprivileged groups mentioned, the OKU could benefit from the digital economy through DEI tailored to their specific needs and capabilities. OKU should not be compelled to rely on another group's DEI, even though that possibility may be available for the former.

We analysed our data further by cross-tabulating three variables; entrepreneurship domains, target groups and levels of governance (state vs federal), revealing the DEIs distribution across target groups. The result of the cross tabulation can be observed in Diagram 4.1d below;
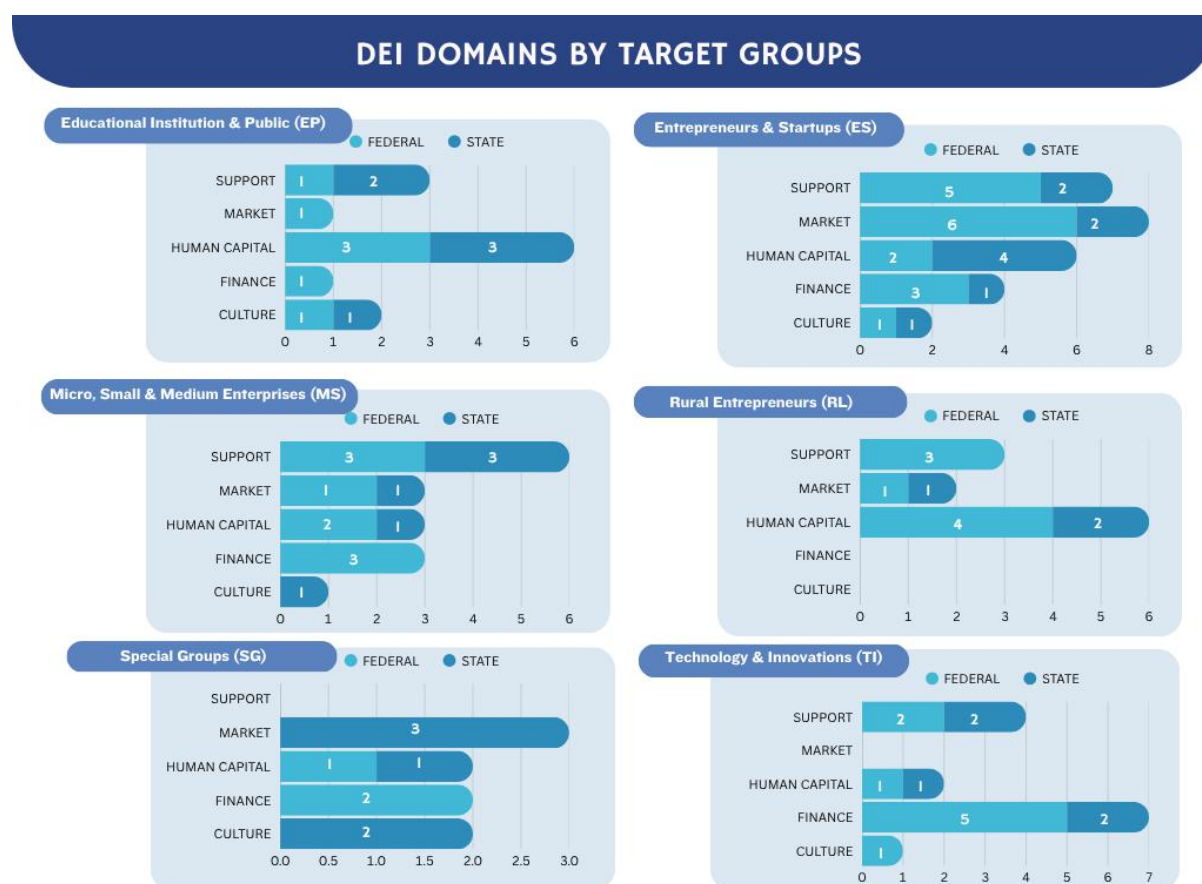

Diagram 4.1d DEI Domains by Target Groups

On a glance, the chart showed **ES as the oft-targeted group for federal government's initiatives** for both *support* (5) and *market* (6) domains, aside from also benefitting from State's *human capita*l initiative (4). Aside from ES, other groups that appear to be focused for particular domains (having n≥4) include; TI for federal's *funding*, RL for federal's *human capital* and MS for state's *human capital*. On the other end, SG which is made up from assorted target groups has no specific initiatives for Federal's *support*, *market* and *culture* categories and; State's *support* and *finance* domain. There were also other pertinent observations made.

Human Capital **initiatives benefit all of the targeted groups**, with more allocated to education (EP) group (total of 3). As indicated in Diagram 4.1a, this is the domain where the State's number (15) surpassed the federal's (13) which might raise overlap concerns. Sarawak's focus on human capital includes specific entrepreneurship training, skilled and unskilled forms of development and the development of specific skills for entrepreneurship in educational institutions.

Support initiative plays a supplementary role to the human capital development by offering incubators, mentors, working space and other assistance. It is most often offered together with *human capital* trainings, such as the State's Anjung Usahawan and federal's eUsahawan's Hub. As indicated by Diagram 4.1a, it is the second most provided initiative (23). Most of the initiatives under this domain focuses on ES and MS, while there is none offered for SG. RS only benefitted from three initiatives initiated by the Federal government with none from the State. TI enjoys two support initiatives from Federal and State respectively.

There is a lack of finance DEIs in Sarawak. Finance initiatives focused mainly on TI (7) and ES (4) and the State only offers three initiatives out of the total 17. While this can be potentially complemented by federal's financial initiatives, the lack of digital entrepreneurship financing might leave underserved communities (for example, RL and SG) to compete for business funds on a national level, while also considering that much of the funding available focuses on startups and technology and innovation ventures instead of underserved communities. *Human capital* initiatives could also be rendered ineffectual without funding initiatives to help target groups to operate their businesses.

Market initiatives heavily target ES (8 out of 16) with none focused on TI. The distribution for other targets, in a decreasing order is SG (3), MS (2), RL (2) and EP (1). Special Groups (SG) are targeted by Sarawak's *market* initiatives, in the likes of dBazaar, Digital Kenyalang and eWanita, providing digital marketplaces for women, bumiputera and rural entrepreneurs, in a manner not observed at Federal level. These *market* based initiatives also have a focus on building entrepreneurial culture amongst Special Groups, thereby further benefiting them.

The findings of this research do not necessarily suggest 'the more the better' in any of the DEI categories versus target groups numbers. In some instance, such as *human capital* initiatives, we can see that there are initiatives type which are implemented for all the target groups. However, figures that are extremely high or low might need a closer examination. For example, there is a possibility that targeted initiatives with large numbers, such as eight *Market* DEIs targeted at Entrepreneur and Startups or seven *Funding* DEIs targeted at Technology and Innovation denoting overlaps could be reviewed for collaboration or synergy. Alternately, where there is zero initiative category that targets a specific group, such as the absence of *Funding* for Rural Entrepreneurs, highlights a need for rectification.

4.2 Study 2 Project Performance Indicators

The findings from this section were drawn mainly from the structured interview that has been conducted with DEI implementers and beneficiaries. By using DEIs performance as a point of discussion, we explored issues pertaining to the implementation of the initiatives. The discussion on this section does not provide an objective evaluation of the programme as this is beyond the scope of our study, thus discussions on performance intend to tease out issues pertaining to the feasibility and efficacy of DEIs involved.

4.2.1 Nature of indicators

Performance indicators correspond with their
level of governance. Indicators of Federal and State's digital economy policies are often expressed as strategic goals measurable only through vigorous data collection. For example, the primary policy for digitalization, the Malaysia Digital Economy Blueprint outlines goals for different domains (see Diagram 4.2.1 below).

POLICY-LEVEL PERFORMANCE INDICATORS

RAKYAT
- Creation of 500,000 new jobs
- 100% household with access to internet
- All students to have access to online learning

BUSINESS
- 30% uplift in productivity across all sectors by 2030
- 22.6% of digital economy to Malaysia's GDP
- 875,000 micro, small and medium enterprises (MSMEs) adopt eCommerce
- Attract 2 unicorns (home-grown or foreign)
- RM70 billion investment in digitalisation
- Increase the number of startups to 5,000

GOVERNMENT
- 100% civil servants to possess digital literacy
- 80% end-to-end online government services
- All ministries and agencies to provide cashless payment option in 2022
- 80% usage of cloud storage across the government in 2022
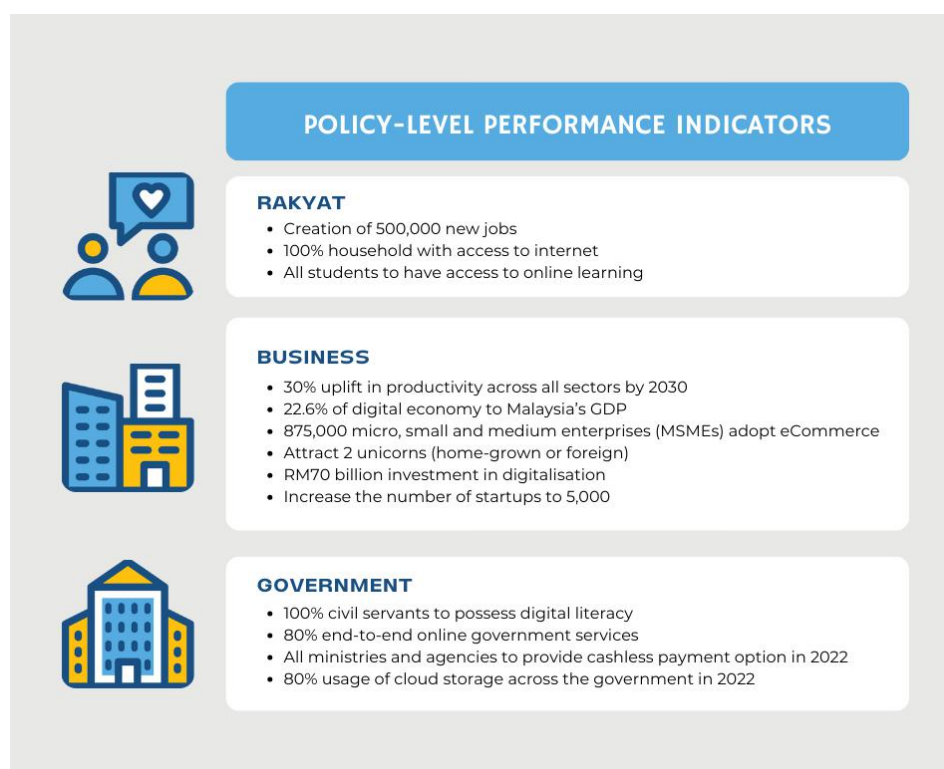
Diagram 4.2.1 Example of policy-level performance indicators, as shown by these enlisted in the Malaysian Digital Economy Blueprint.

Conversely, performance indicators by singular initiatives at the lower governance level are much simpler - some expressed simply as the total number of trainees, beneficiaries or events organised. Numbers under these initiatives are much simpler and required simple data-keeping. Performance goals are often expressed in measurable Key Performance Indicators (KPIs) numbers due to its perceived accountability. However, this has an adverse effect of simplifying initiatives as a 'number chasing' exercise that places quality as a second priority. The interviews that we conducted produced a few highlights;

COVID-19 pandemic assisted some efforts towards digitalisation. While achieving KPI numbers is sometimes straightforward, it can also be achieved in unusual circumstances. One initiator shared how "COVID did the work" for targets aimed at digital adoption, such as numbers of MSME partaking ecommerce and digital economy's GDP share as the pandemic compelled digital adoption. According to him, some of the enlisted goals under his responsibility were achieved by the first year of the launch of his initiatives as it was accelerated by the global pandemic.

KPIs are mostly plagued by uncertainty and they were also questioned… Initiators opined that some of the indicators were arbitrarily determined without clear indication of the decision's benchmarking. Some KPIs were claimed to be 'too low' and inferred as planner's uncertainty. This uncertainty is in part contributed by vague measurements - such as what is meant by 'digital literacy' for individual citizens ("Does knowing how to use Tiktok equate as having digital literacy?" He quipped). This unpredictability is further contributed (and will continue to plague policy planners) by the disruptive nature of the digital world, such as the recent prominence of Generative AI such as ChatGPT.

and in some cases, negotiated or even, rejected. One ground level implementer shared that his agency negotiated for more feasible goals vis-à-vis contextual consideration. The implementer shared how they were successful in their bidding while expressing appreciation for the flexibility given. Thus, bottom-top goals were also set, for example on number of companies registered/onboarded in SSM (Suruhanjaya Syarikat Malaysia)/shopping platform, number of participants engaged, number of programmes implemented or number of sales generated (in Ringgit Malaysia). Some KPI is simply deprecated as misleading, such as two participants' (representing two federal agencies) rejection for Unicorns. One initiator flatly rejected unicorn status as a guarantee to profitability by citing an example of a well-known unicorn that has 'been in the red for forever'. Another stated unicorns as misdirected goals as their development requires vast amounts of resources that are better off allocated to more beneficiaries, as he added that corporate investors will 'take care' of unicorns they deemed profitable.

Overlaps happen from policy level and initiators are well-aware of it. These replications are perceived as inevitable as all the agencies are given the directives to promote digital adoption. As according to one implementer;

> In Malaysia, we have many agencies that *step on other people's toes* (i.e. overlaps), some ministries focus on *usahawan* (entrepreneurs), some ministries focus on digitalisation, some focus on *usahawan* but maybe *wanita* (women). *There will be overlaps*. Now we understand *digitalisation is the way forward for everybody*, right? So every ministry, every agency, they are going towards digitalisation. There are so many (sic) confusions because of this direction (towards digitalisation).

The implementer's quote above indicated how digitalisation has been adopted and explored as an avenue for their social improvement agenda. The interviewee from a prominent federal agency however, later shared that such overlapping is an opportunity for collaboration, when he said;

We believe that collaboration is very important. So in any of our programmes, we collaborated for the scope, we collaborated with all the associations, chambers of commerce and everything because they have the community. We do have the programme, we do have the initiative, we do have the knowledge, but they have the community. The combination or the collaboration is very important or the initiative *tak ke mana lah*.

While initially the implementer framed overlapped negatively (stepping on other people's toes), he later shared how such 'overlap' presents an opportunity to collaborate. An agenda-based agency (digital economy, training providers, vocation education) is able to collaborate with community/group-based agency (youth, rural, women, entrepreneurs) as he added without it, the initiatives would have not reached their goals (tak ke mana). According to his opinion, overlap driven collaboration is serendipitous, and facilitative to reach agencies' goals.

While collaboration is possible, KPI reporting poses a challenge for shared reporting. Some of these overlaps are not mere replications, they are the same. One initiator shared how their initiatives were reported by multiple committees:

They introduced their entrepreneurs to our programme. We have many committees that monitor other agencies' programmes and we report to so many committees and they report on *the same programme* into so many committees. I'll be honest with you. Some programmes we reported to at least five committees and then the best part, the committees are not just lower-level committees. It sometimes goes to the Prime Minister's Committee. I don't want to mention which committee but they mentioned for example, "Our programme - we achieve 100,000 trained for this year". And then another committee reported, "100,000 trained SMEs". These committees *reported the same thing* (figures). At the end of the day, five committees reported the same programme and the same numbers from our programme.

The setting of performance indicators with the intention to promote agencies' accountabilities produces some interesting outcomes and challenges as described above. The messiness of policy implementation has been well documented elsewhere (for e.g. Lewis & Moose 2006), thus what is presented above is by no means unique to DEIs implementations. The remedy to the situation is to practise adaptability, by constant evaluation and listening to actors involved on the ground to bridge the gap between policy and realities on the ground. We continue our discussion by presenting our findings from our interviews with implementers and beneficiaries of DEI in the following section.

4.2.2 Self assessment vs beneficiaries assessment

The rating of initiatives given by initiators/implementers and their beneficiaries provided an insight into the initiator/beneficiary relationship. The rating serves as a heuristic device of which the interviewee's ranking justification informs more about the DEIs, than as an indication of the DEIs' actual performance. We had gathered interview responses from both initiators/implementers and beneficiaries of three DEIs which we kept anonymous (referred to as A, B and C) with their description provided in the table below for context;

Initiative	Explanation
A	An incubator and accelerator initiative organised primarily by private entities focusing on specific categories of product based in the city, with a small number of beneficiaries. Provides *digital entrepreneurship culture*, *digital support* and *digital human capital*.
B	A private local-based online market platform. Provides *digital market*, *digital human capital* and *digital support*.
C	An rural-focused national-level and infrastructure-based initiative that organises a variety of programmes surrounding the infrastructure provided. Provides *support and infrastructure*, *human capital* and facilitates *digital market access*.

Table 4.2.2 Selected DEIs and their characteristics

On a general overview, the ratings with its polarity between 0 (not satisfied) to 5 (extremely satisfied) were prone to a centre-right tendency. The initiators/implementers justified their DEIs' efforts with good ratings while the beneficiaries gave good ratings as they were simply thankful to receive benefits. One of the lowest ratings came from a beneficiary who rated 2 for initiative C for 'lack of human resource' which she perceived as the reason for the initiative experiencing dormancy. The highest rating of 5 is given by both implementer and beneficiary of Initiative A for the thoroughness of the DEI. The implementer emphasised on the enculturation aspect of their initiative, where trainees were exposed to the world of the industry not only in the matter of daily business dealings but also emphasise on marketing and innovation aspects. On the other hand, the beneficiaries were grateful for the networking she obtained, which gave her a sense of community alongside other participants.

Initiative B provided an insight of DEI with many beneficiaries. The beneficiaries knew the initiator staff personally but assumed different forms of relationship with the latter. The first beneficiary from rural area with access to rarer goods supply often received orders from the initiator even though at irregular intervals. The initiator kept a close relationship with the beneficiary, including conducting personal visits and caring for the beneficiary when they knew that she was pregnant. The second beneficiary of this DEI on the other hand, is much more established (value-added product, mechanised production processes and has glossy printed plastic packaging) and supplies not only to the initiator but also to many of the local department stores and middle persons. While both of the beneficiaries rated the DEI as satisfactory (3), they possessed different types of relationship with one another. The initiator similarly rated 3 for his own initiative, saying that they can do much more for rural entrepreneurs.

Initiative C is characterised by a more impersonal relationship compared to the two previous initiatives. As the initiative is infrastructural, the engagement involved is transactional. However, we discovered that infrastructure initiatives such as Initiative C possessed a measure of multiplier effect as it benefits the rural middle person who in turn, is capable to market products of other rural producers due to the facilities provided. The implementer of Initiative C rated their effort between 3-4 while the beneficiary rated 4 (very satisfied). The implementer (hired staff) feel like there is more that can be done to assist rural entrepreneurs while the beneficiary is simply grateful to have the infrastructure available for his use. The

middle person beneficiary that benefited from this initiative even mentioned that his first encounter with digital entrepreneurship was through his local DEI, which without it, he would not have been involved in entrepreneurship or help other rural producers to market their agricultural products.

This exploratory pilot study managed to capture a snapshot of DEI operations and of opinions contrasting the ones of the ground-level implementers and the beneficiaries. While the data obtained is not exclusive, it provides a brief look on the initiatives, the extent that it provides support particularly to the rural entrepreneurship ecosystem, the potential for further expansion of roles and the interpersonal relationships that existed from the initiatives. The structured interview conducted gave us richer ground conditions narratives of DEI implementations.

4.3 Entrepreneurs Reach, Challenges and Strategies for Improvement

As both Federal and State governments uphold inclusivity, rural entrepreneurship poses a 'reach' challenge for DEIs. To give an example relevant to digital communications, the Federal government's JENDELA program to expand internet connectivity to 100 percent of the nation's population met the biggest challenge to cover the 'last 3 percent'[2] of the population located in the remotest area. Domestically, the state aims to achieve 93.6% internet coverage by the end of 2025, with current 5G coverage at 63.8% in populated areas[3]. The hindrances to promote rural entrepreneurship goes beyond geographical distance and spatiality, as the distance of locality from major cities also coincides with the gap in digital readiness, knowledge and contextual differences. Sarawak is still facing infrastructural issues in its bid to promote digital entrepreneurship.

4.3.1 Entrepreneurs reach

We have briefly discussed in previous sections how DEI for rural entrepreneurs tend to favour some domains while severely lacking in the others. Whilst being top three targeted for DEIs, rural entrepreneurs are deprived from some of the necessary stimulus. We extracted rural entrepreneurs targeting DEIs from Table 4.1c above (see Diagram 4.3.1 below)

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[2] https://www.mcmc.gov.my/skmmgovmy/media/General/pdf2/Insight-Digital-Connectivity.pdf
[3] https://www.thestar.com.my/news/nation/2025/07/01/sarawak039s-internet-coverage-set-to-reach-936-by-year-end
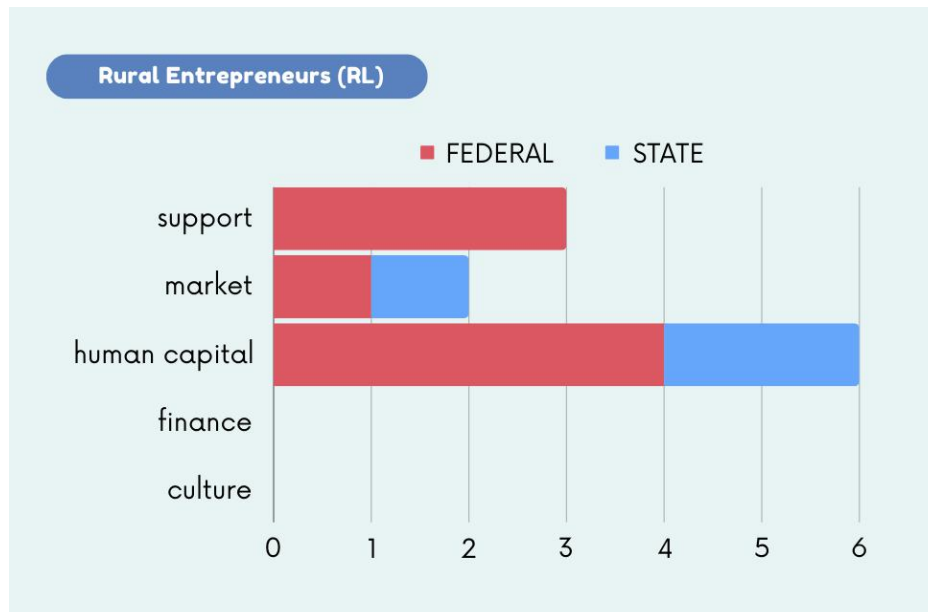
Diagram 4.3.1 Number of federal and state DEIs targeting rural entrepreneurs

Our mapping exercise revealed the absence of *finance* and *culture* DEI targeting rural entrepreneurs. While there were many *human capital* DEIs for rural entrepreneurs (RL), funding options and enculturation programmes for e-commerce adoption were absent from both Federal and State initiatives. RL arguably requires financial aid more than their urban counterparts, as their inability to enjoy conventional (sometimes a combination of) road, internet, water and electricity connectivity as their urban peers incurs higher access costs. Digital adoption also requires purchase of hardwares such as computers and printers and softwares such as invoicing or order management systems which are usually piled on as hindrance to involvement in entrepreneurship.

Similarly, the absence of digital entrepreneurship culture initiatives for RL is worthy to be highlighted. While human capital initiatives upskill the community with the know-hows of entrepreneurship, the survival and staying power of their businesses are secured through enculturation, i.e. the fostering of culture of innovation and risk-taking to nurture the entrepreneur mindset amongst RL. The lack of funding and culture initiatives is a missed opportunity considering both Federal and State government existing efforts in training their human capitals for entrepreneurship.

Trainers were not motivated to provide extra incentives to encourage participation. Two implementers that we interviewed unfortunately expressed their unwillingness to provide 'extras' for the rural community's participation. Both expressed the reluctance for such provision by drawing from their previous experiences. The federal implementer shared their previous effort to provide food which was met with complaints on the quality of the food provided (not delicious). From the experience, he summed up that they return to their 'mandate' which is merely to provide training and shall not provide anything beyond. The state initiator argued that such provision is not necessary, as what ultimately matters is the participants' interest, as he expressed;

> ..if they don't want that programme, even if for free, you give goodies also, they don't want (to attend) that because it does not benefit them.

Initiatives reach rural entrepreneurs better through the role of physical digital centres. Despite the online nature of digital initiatives, we found that DEI reaches rural communities better through the presence and role of physical centres such as Pusat Ekonomi Digital (PEDi), Pusat Internet Desa (PiD) and Digital Community Centre (DCC). Beneficiaries that we interviewed shared the role of such centres disseminating information about latest programmes to local entrepreneurs. Operators/implementers of these centres are also seeking to expand the roles and services to rural entrepreneurs, aside from their existing role in providing facilities for entrepreneurs' training, communication and order fulfilment. Initiatives such as PEDi, which initially existed merely to provide internet connectivity has now been converted to centres for digital economy, shows the adaptability to contemporary changes. Among the suggestions/roles we noted for rural digital centres from our interviews were:

> 1) **Become Pick Up and Drop Off (PUDO) Point for Rural Entrepreneurs** - as many courier providers were sometimes reluctant to complete the last-mile of delivery or pick up point, digital centres which are usually located in strategic areas by the main road network can function as points for courier pick up (of goods to be delivered to customers) and drop off (parcels for local community).

> 2) **Offering facilities for rural entrepreneur's rental** - while most facilities in such centres are available for basic usage, one manager interviewed proposed to provide more facilities to rural entrepreneurs at a price, in order to also maintain the financial sustainability of the centres. Facilities that were suggested include advertising space (PC screensavers, walls, bunting placements), office rental (for product pitching or meetings), shelf spaces (for product display or sales) and so forth. The charges for their facilities, the manager added, should be on the prerogative of the centre managers as they can apply tiered-pricing to charge lower rates for low-income entrepreneurs.

> 3) **Centre managers to facilitate business registration and expansion**. One initiator also shared how he assisted a rural entrepreneur's registration through the centre in order for the latter to benefit from more initiatives. The centre collaborated with HRD Corp, FAMA, SSM and MYNIC to innovate entrepreneurs' digital transformation through training, agro-marketing, business registration and online domain acquisition. Other similar effort by another initiator in discussing with commercial banks to fund local businesses can be seen as active expansion of the role of DEIs to promote the success of local entrepreneurs.

4.3.2 Challenges

"Not everything is digitizable"- the nature of rural products. One of the implementers remarked 'not everything is digitizable' when asked about rural entrepreneurship challenges. Rural products mostly consist of fresh produce that are challenging to be marketed through digital platforms. In one example obtained, a local digital marketplace only acquires a rural seller's produce when there is a demand. This suggests that the marketing of such produce is only possible if it is demand-based and backed with transportation arrangement. One implementer expressed the challenges in marketing rural products in the Sarawakian context;

"Certain products are not suitable for us to bring it on to digitalize the product, we have the challenge there. If we can go further, it should be more (by-demand) like Grab, (but) they are doing only food. Like Shopee is not much into food. If Sarawak, (we) should have some local platforms, which is suitable for Sarawak and for Sarawakian uses. There are certain things in Sarawak that are not the same as West Malaysia.

Sarawak has this logistic challenge. Let's say in Kanowit, Kuching, Miri or Bintulu, you have to create something local which is reachable and also available. Once it is reachable it must be available also. Sometimes it's reachable but it's not available. Availability is also another issue. You have to improve your logistics. Not every address in Sarawak is reachable. Once you can do that, digital entrepreneurship will boom by itself.

The comment by the experienced DEI manager elaborated her personal observation. Rural produce was seen to be more suitable using the Grab-food delivery model, which delivers from local vendors (food providers) to local consumers, instead of the Shopee model, which uses courier services covering nationwide destinations. Her comments highlighted other issues which she differentiate with the 'reachable' and 'available' description. While reachability describes the problem with logistic coverage, availability describes the problem with local entrepreneur's production consistency. It can be inferred by her comment that she observed the lack of persistence, continuance or even the longevity of local businesses.

Digital literacy remains a factor to digital entrepreneurship adoption. We gathered that adoption to digital uptake by rural entrepreneurs was still low. From the beneficiaries' interviews we learned that digital technologies used by rural entrepreneurs were often limited for marketing and promotion only. This observation is consistent even for urban entrepreneurs. The manner of promotion varies, with some that has been gathered;

1) **WhatsApp**; the current WhatsApp feature in which users can update their "Status" enable advertising of the goods. However, this method is limited at its reach as it can only be viewed by people who already have the entrepreneur saved as their contact.

2) **Facebook**: Facebook as a platform hosts various groups for local-based entrepreneurs (for e.g. Sayang Sri Aman) to place advertisements of their products. These groups are widely used by many local entrepreneurs to reach their potential customers. Additionally, Facebook has a 'Marketplace' feature in which local sellers can upload their product catalogue.

Usage of online tools beyond promotion - such as to complete transactions (from receiving orders, payment and good delivery) among rural entrepreneurs is rare, with the exception of one entrepreneur who was tech-savvy enough to create an entrepreneurship app. The said entrepreneur can be assumed as an outlier as he possesses the IT know-how and does not represent general rural entrepreneurs. He used Shopee to market his product alongside other products produced by other neighbouring entrepreneurs. It is impractical to expect rural entrepreneurs to transform into a tech-savvy group that can fully embrace digital technology with high digital literacy. Perhaps IT-savvy local middleperson (or community representative, as proposed by one interviewee) can be explored as a facilitator to rural e-commerce without

insisting every rural entrepreneur to be digitally literate, which is not feasible with the current existing training module available for them.

Quality of training and trainers providing digital entrepreneurship human capital training. The rudimentary level of technological usage of entrepreneurs online could partially be accounted to the poorly trained or low-skilled trainers assigned. While we lacked any measurement to systematically assess the digital adoption of DEI beneficiaries we interviewed, the trainers themselves do not exhibit high levels of digital entrepreneurship even though they have undergone some human capital DEI training. The digital adoption of the trainer's businesses could have been done by a person without similar training.

A quick observation online revealed the existence of many trainers with a mix of qualifications often do not fit the training they provide. While some of the trainers claimed to be HRD Corp certified, the qualification of the others could not be ascertained. While the effect of these DEI on rural entrepreneurs were unclear, the preoccupation to promote digital entrepreneurship evidently produced a thriving industry of trainers funded by large sums of government allocations. The quality of training conducted, particularly those in rural area is at risk of being conducted by ineligible trainers motivated by the lucrative payment allocated by government budget to train rural entrepreneurs.

Diagram 4.3.2 Examples of some of the actual DEI training in Sarawak. For illustrative purposes only.

The mismatches on the ground go beyond trainers' expertise, as programmes are sometimes mismatched with those who actually attend. One implementer shared that sometimes upon reaching a targeted community, the age group that they targeted (youth) was absent. To complete the job in hand, they sometimes 'adjust' their 'longhouse digitalisation' module originally intended for youth, to something that suits their parents and children attendees to remain within the same theme. This example suggested the possibility of mismatch due to poorly planned and lack of consultation between initiators and their target audience.

While we do not produce a conclusive list of challenges faced by DEI initiatives on the ground, we manage to put a light on a few challenges in this exploratory study. These challenges were interlinked in the context that they exist and require a careful revamp that goes beyond local diagnosis and topical treatment, but rather a rethinking of the digital entrepreneurship model for rural communities in Sarawak.

DEI implementers were often actors that carry the most weight to secure the success of the government's policy. Their ground experience and problem solving often produces practical knowledge and strategies that can ensure better execution and result of governmental programmes. Our interviews with DEI implementers gathered a few strategies for improvement;

Bottom up policy planning to ensure suitability to local context. From the findings presented above, it is clear that most of the ground implementers have a better sense of what makes a better DEI and how it can be executed better. From our observations with their negotiation, rejection and adjustments of KPIs, the design of better initiatives in collaboration with private corporations to the understanding of community's attitude (where audience will participate in programmes useful to them, regardless of extra incentives), ground implementers should be empowered to have a role in the strategic planning of DEIs. As actors that are closest to the DEI beneficiaries, implementers with experience might have a better idea on how DEIs should be designed, KPI that should be set and stakeholders to be engaged. Implementers have also shared their effort to understand the community's needs better - by running a survey to gather the type of training the community they serve needs - showing their effort and ingenuity. If DEI can only be designed in a universal standardised manner, ground implementers should be empowered and encouraged to 'customise' DEI to fit the local context, rather than insisting on standardised 'one fits all' module. DEI should embrace context diversity at its design with allowances for DEI workers to co-design on their level of implementation. This can also be done with prior consultation with the target audience to assess their needs and availability to participate.

Government, non-governmental and business partnership. One local non-governmental initiator showed a possible model of collaboration between government and private initiatives. The well-networked initiator managed to create linkages for their programme to be sponsored by both government agencies, private companies and individuals; obtaining a mixture of monetary contribution, venue sponsor, discounted training and raw material sponsorship. The annual initiative gained traction as there were plans to replicate their programme in another city as a corporation's Corporate Social Responsibility (CSR). There were also instances of multinational corporations (MNCs) seeking to conduct programmes with local communities in which local intermediaries (government or NGO) could collaborate as partners. One (policy) implementer shared how his agency leveraged for win-win situation with MNCs for communities to equally benefit from MNCs outreach programme by negotiating for MNC to fund productivity software training for civil servants or social media exposure to rural communities. Through the negotiation, the MNCs gained users for their softwares and platform while the participating community acquired new skills.

More collaborations. While not a groundbreaking idea, one way to 'solve' the issue of replication of efforts is through collaboration. The way to prevent doing the same thing separately, is to do the same thing together. Our research indicated strategic collaborations between agencies has already happened and efforts are streamlined, in which the agency that has the 'programme' collaborate with agency overseeing 'community'- such as youth (KBS), women (KPWKM), rural community (KKDW), or entrepreneur (KUSKOP), chambers of

commerce or associations. Aside from the *module* (which an agency has an initiative) and *community* (which a party has a relevant target group) partnership, inter-levels collaborations are also possible between federal, state, corporation or any differing-level agencies for knowledge transfer or dissemination of 'modules'. Alternatively, collaboration has also been established for partners to fill in different expertise gaps, in which different portions within a training module can be operated by different collaborators, for e.g. between one trainer and another trainer.

Narrowing down and creating niche focus. There were also reported efforts by initiators actively avoiding effort overlaps, either by focusing on different niches or scoping down their coverage. One policy initiator mentioned how their organisation intentionally avoided general 'entrepreneurship' and focus on startup instead - which by his claim, scopes down his agency's focus, enabling them to pilot their ideas on a smaller digital entrepreneurship subset before expanding to other focus groups. Another local-level initiator mentioned how they do not offer funding as there should not be overlap with the state-level initiative. The scoping down of coverage and focus on niche areas have obvious benefits to produce tailor-made initiatives that are better suited to different target groups, aside from avoiding overlaps of initiatives. However, this could have an adverse effect in which it limits the entrepreneur's recourse for assistance. It is also worthy to consider that while DEI overlaps might signify a poor streamlining of efforts and management of resources on the policymaker's end, it might pose an advantage on the entrepreneur's end, as it provides them with more avenue for resources.

Rural entrepreneurship to seek alternative models. From the culmination of observations above, it is logical for future initiatives to seek for customisable, bottom-up, contextual sensitive and niche-fitting of initiatives. This is especially relevant for the promotion of digital entrepreneurship amongst rural entrepreneurs. The modelling of initiatives is often done with urban settings as the context. This often results in models of human capital training, shopping apps, payment methods, nature of produce or even policy that serves urban settings with rural context subsequently fitted in as an afterthought. Serious effort to promote entrepreneurship amongst rural communities should be planned by placing rural context first. While frugal policymakers might scorn at the replication of urban efforts, rural entrepreneurship, as we have gathered from our empirical finding, is not the same as urban entrepreneurship (as discussed in 4.3.2 above) and thus needed an alternative model that fits their nature and needs.

5.0 CONCLUSION

This exploratory mapping research has provided the current snapshot of digital entrepreneurship initiatives for Sarawak. While the initial intention of the research was driven by the conjecture of a possibility of effort overlaps between state, federal and non-government efforts in promoting ecommerce amongst entrepreneurs, it is our opinion that it is not at an alarming state, though there is a need for the streamlining of effort than can be remedied with effort such as our mapping and the coordination and exploration of possible collaborations between actors in the ecosystem.

Our research has shown the over and under-representation of particular initiatives and target groups. The key highlights are the thorough coverage of human capital initiatives across various groups, the intensity of financing initiatives for technology and innovation businesses, and the scarcity of funding and cultural initiatives for rural entrepreneurs. One extreme observation is the exclusion of Person With Disability group from any federal and state digital entrepreneurship initiatives. It is our hope that the outcomes of our diagnostic will be reconciled, given both administrations' pledges for inclusivity and the positioning of entrepreneurship as poverty alleviation means.

The relationship between DEI implementers and beneficiaries observed led to our subsequent insight on the importance of the role of ground implementers in achieving the objective of governmental programmes. We opined that initiative implementers should be included from the early strategic planning stage of policymaking to benefit from their knowledge and contextual understanding of the community that they serve. Even when that is not possible, the policy workers on the ground should be entrusted to modify the means to the planned policy end when they feel that the 'one fits all' standardised modules do not serve the needs and thus, do not contribute towards reaching the planned goals.

Moving forward, there is no novel suggestion that this research can produce, other than observations and suggestions that we gathered from our empirical research. Actors in the DEI ecosystem are the same as other realms, they are agentive actors with beliefs, attitude and ingenuity in their preoccupation. Policymakers only need to loosen their impulse for more control by empowering ground workers with more responsibilities and corresponding decision making to achieve the non-compromisable end. There should be a recognition that implementers have shown their innovation and effort, despite the few unscrupulous actions as we have highlighted above. The DEI fervour has also manifested into some unintended (or intended?) consequence that benefits the training providers industry that needs tighter regulations and control. As governments are doubling its effort to upskill and create income generation through initiatives such as *Program Latihan Madani*, the training industry's future expansion has to be monitored to ensure the efficiency of its purported benefits.

There is still much potential for rural entrepreneurship particularly from the unique products that they offer to the market. Digital market has a high profitability potential with its reach to global customers, if it could be harnessed effectively. However, as argued above, there is a need to seek for an alternative model for digital rural entrepreneurship. Current rural entrepreneurs reliance on middle persons for their ecommerce participation, points to a need for alternative model to their 'representative presence' should be explored, rather than pivoting to the tall order for each of them to be IT-savvy online merchants. This, and other innovations to enable the participation of rural entrepreneurs should be explored by further research with participation of DEI implementers or other actors with experience of working with the group.

6.0 RECOMMENDATIONS

The different depth of initiatives and the different level of support for entrepreneurs. Analyses done were mostly on-the-surface, based on cross-tabulation contrasting different groups (of DEI domains and target groups) without any measurement of the depth and quality of the initiatives. There is a wide variation amongst the DEIs that can be evaluated differently. For example, there are single domain DEIs that are one-off initiatives compared to other multifaceted (covering a few domains) and long term (involving a series of engagements) initiatives. This makes the presumed one-to-one quantitative comparison that we presented in our research slightly misleading. While it is not feasible within our current means to compare these initiatives, we hope that subsequent research would look into these different levels of engagements. Findings from such research can reveal the extent of local entrepreneurs' support on every stage of their development, perhaps on a level that is provided to tech startups on every TRL (Technology Readiness Level), with dedicated support from the inception to the scale up.

There are various types of entrepreneurs, even amongst rural entrepreneurs. There is possibly an entrepreneur archetype in terms of digital adoption. From this small research, there was one rural entrepreneur that was skilled enough to build his own apps for the promotion of native products while the other has successfully launched an online marketplace for native products. The two entrepreneurs exhibited local technological proficiency amongst other rural entrepreneurs, showing promising signs among local young entrepreneurs to capitalise on the promises of the digital economy. Further research to study the stages of digital adoption amongst rural entrepreneurs in Sarawak can inform future initiatives to increase local entrepreneur's participation in ecommerce. With the increased popularity of Borneo as a tourist destination, local entrepreneurship has a potential to emerge as a viable economic source for the state of Sarawak.

7.0 AFTERWORD[4]

Since the completion of this research in the last quarter of 2023, Malaysia, and Sarawak in particular, have continued to advance their digital entrepreneurship agendas, aligning with national and state-level strategies such as the Malaysia Digital Economy Blueprint and Sarawak's Digital Economy Blueprint 2030. New and expanded initiatives have emerged, particularly targeting rural microentrepreneurs, to address gaps identified in the original study, such as limited access to funding, infrastructure, and digital skills training. This addendum provides an update on these developments, drawing on recent data and insights to reflect the evolving digital entrepreneurship ecosystem in Sarawak as of July 2025.

Stakeholder Feedback from the 2024 DEI Presentation

On August 8, 2024, the research findings were presented to relevant agencies at a session hosted by SDI, eliciting valuable feedback from stakeholders that both validated and challenged the report's conclusions. Representatives from the Sarawak Digital Economy Corporation (SDEC), TEGAS, SEDC, M-FICORD, MCMC, Pustaka Sarawak, UNIMAS, and private entities like Timogah largely agreed with the report's identification of key challenges, including poor digital infrastructure, inadequate training quality, and the lack of tailored initiatives for rural entrepreneurs and underserved groups like persons with disabilities (OKU). For instance, Amirrul Rizwan from SDEC corroborated the report's findings on training quality, noting SDEC's efforts to engage certified trainers to address this gap. He also supported the report's emphasis on infrastructure challenges, highlighting the Daro community's appreciation for SDEC's digitalization training, which was previously unavailable in rural areas. Similarly, Seraphina from AZAM and Heineken Laluan from Timogah echoed the report's concerns about logistical barriers, such as poor road access and internet connectivity, and the need for better data on product demand to inform initiatives.

Stakeholders also agreed with the report's call for collaboration and context-specific approaches. Amirrul expressed SDEC's interest in partnering with AZAM to establish local champions in every district to address manpower shortages, aligning with the report's recommendation for community-driven models. Dinah Samuel from MCMC supported the report's suggestion to expand the role of NADI as a physical information hub, reinforcing the importance of physical centers like PEDI and DCC in reaching rural entrepreneurs. Rodney from Swinburne validated the report's findings on the unique context of rural entrepreneurship, noting that his research on community-based tourism showed similar disconnects between rural businesses and digital platforms, with tourists discovering homestays through word-of-mouth rather than online listings.

However, some stakeholders raised points of divergence or additional nuances. Nathanael Bolly from SEDC questioned the report's focus on digitalization's benefits, arguing that the primary issue for Sarawakian microentrepreneurs is a lack of demand for their products, particularly in rural areas. He distinguished between IT literacy and digital entrepreneurship literacy, suggesting that the report could further explore the latter's role in enabling practical

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[4] The original report was completed in 2024 but was placed under an embargo as other collaborators intend to publish the research in an academic journal. This Afterword section is to update the feedback and changes that have happened since up to the date that this report is made available to the public.

applications like payment apps. Lelia Sim from SDI touched on the report's scope by highlighting the absence of robust data on product demand, particularly from M-FICORD, and questioned whether agencies like SEDC and TEGAS adequately track the impact of their grants, a point Nathanael acknowledged as a gap. These critiques suggest that while the report accurately identified systemic issues, it could benefit from deeper analysis of market demand and post-intervention monitoring to ensure the effectiveness of digital entrepreneurship initiatives.

New and Expanded Initiatives for Rural Entrepreneurs

The Ministry of Rural and Regional Development (KKDW) has significantly expanded its *Rural Entrepreneurs Digitalisation Programme (Program Pendigitalan Usahawan Desa, PPU)*. Launched to enhance digital adoption among rural entrepreneurs, the PPU has, as of June 2024, benefited 2,524 rural entrepreneurs across Malaysia, with a notable impact in Sarawak. In Sarawak, the programme has supported 167 entrepreneurs by June 2024, focusing on digital financial services, on-demand applications, e-commerce platforms, and social media content creation. Collaborations with major technology partners have facilitated access to tools such as digital payment systems and online marketplaces, enabling rural entrepreneurs to expand their market reach. For instance, partnerships with platforms like Shopee and Grab have allowed rural producers to market agricultural and craft products more effectively, addressing the logistical challenges highlighted in the original report.

Additionally, the *Program Graduan ke Arah Keusahawanan (GERAK)* and *Usahawan Teknikal dan Vokasional (USTEV)* have been pivotal in supporting young and skilled graduates in Sarawak. These programs provide grants of up to RM20,000 to technical and vocational school graduates to start or expand businesses, with a focus on digital integration. By 2025, these initiatives have supported over 500 Sarawakian graduates, many from rural areas, in launching tech-enabled ventures such as e-commerce stores and digital service platforms. The *Program Go Digital*, offering grants of up to RM10,000 for hardware, software, and digital services, has further empowered microentrepreneurs to adopt tools like point-of-sale systems and inventory management software, addressing the gap in advanced digital practices noted in the original study.

The *Skim Kredit Mikro Sarawak (SKMS)* and *Skim Pinjaman Industri Kecil dan Sederhana (SPIKS)* have continued to provide financial support to Bumiputera small and medium enterprises (SMEs) and microenterprises. SKMS has disbursed loans to over 1,200 rural entrepreneurs in Sarawak by mid-2025, enabling investments in digital tools and business expansion. SPIKS, targeting SMEs, has supported 300 businesses with loans for working capital, machinery, and premises upgrades, with a focus on integrating digital solutions to enhance competitiveness. These initiatives address the funding discrepancies identified in the original report, particularly for rural entrepreneurs who previously lacked access to national-level funding schemes.

The *Program Jum REGISTA Bisnes*, implemented in collaboration with various agencies, has registered 4,280 informal entrepreneurs in Sarawak by 2025, formalizing their businesses and providing access to digital training and e-commerce platforms. This program has been instrumental in bridging the inclusivity gap, particularly for underrepresented groups such as

women and low-income communities, though efforts to include persons with disabilities (OKU) remain limited.

Impact on the Digital Economy and Rural Entrepreneurship

The digital economy in Malaysia continues to grow, contributing RM427.7 billion (23.5% of national GDP) in 2023, according to the Department of Statistics Malaysia (DOSM). Sarawak's entrepreneurs have capitalized on this growth, particularly with the rise in domestic online shopping, which reached RM494.2 billion in 2022. Rural entrepreneurs in Sarawak have increasingly adopted platforms like Shopee and social media marketplaces (e.g., Facebook Marketplace) to reach broader markets, as highlighted in the original report. However, challenges such as limited internet connectivity and logistical barriers persist, underscoring the need for continued investment in digital infrastructure.

The *Sarawak Digital Economy Corporation (SDEC)* has launched new initiatives including the expansion of *Digital Village Accelerator Programme* in 2024, aimed to establish digital hubs in rural areas, providing access to high-speed internet, co-working spaces, and training facilities. By mid-2025, 15 digital hubs have been established in rural Sarawak, benefiting over 1,000 entrepreneurs. The initiative is also matched by the federal government's additional 23 National Information Dissemination Centres (NADI, previously PEDI) across Sarawak, which all began their operation by the end of 2024. These hubs and centres address the infrastructure gap noted in the original study by increasing the numbers of physical centers like the aforementioned NADI/PEDI and Sarawak state's Digital Community Centres (DCC), continuing its role to disseminate information and training to rural and underprivileged communities.

Addressing Gaps and Future Directions

While significant progress has been made, gaps identified in the 2023 research persist. The absence of finance and culture-focused digital entrepreneurship initiatives (DEIs) for rural entrepreneurs remains a concern, though SKMS and Go Digital have begun to address financial barriers. The lack of tailored DEIs for persons with disabilities (OKU) continues to be a critical oversight, with no significant new initiatives reported by 2025. Future efforts should prioritize inclusive programs that cater to OKU and other underserved groups, potentially through partnerships with NGOs and private sector actors, as demonstrated by successful collaborations in the *Jum REGISTA Bisnes* program.

Moreover, the quality of training remains a challenge. While programs like PPU and Go Digital have expanded access to digital skills, the mismatch between training content and rural entrepreneurs' needs persists. Initiatives like the Digital Village Accelerator Programme are beginning to incorporate community-driven, context-specific training modules, but broader adoption of this approach is needed. Collaboration between government, NGOs, and private companies, as seen in the sponsorship models of *Jum REGISTA Bisnes*, offers a promising framework for addressing these mismatches and fostering sustainable DEIs.

Conclusion

The digital entrepreneurship ecosystem in Sarawak has evolved significantly since 2023, with new initiatives like PPU, GERAK, USTEV, Go Digital, SKMS, SPIKS, and Jum REGISTA Bisnes enhancing support for rural entrepreneurs. These programs have addressed key gaps in funding, infrastructure, and market access, though challenges such as inclusivity for OKU and training quality require further attention. As recommended in the original report and reiterated again in this chapter, current and future initiatives should be tactfully designed to be inclusive and equitable, ensuring access for niche marginalised groups, while also formulating impact measurements tied to their objectives and based on targeted outcomes from the outset. As Sarawak continues to align with Malaysia's digital economy goals, future DEIs should leverage local insights, foster cross-sector collaborations, and prioritize rural-centric models to ensure equitable and sustainable growth in the digital entrepreneurship ecosystem.

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APPENDIX
Federal Initiatives

Initiator	KKD		KUSKOP					MOSTI		MTEC		MOTAC	MITI		KKDW		MAFS	MEWC
Implementor	MDEC	MCMC	BPES	INSKEN	MDEC	MDEC, CEDAR	SME Corp	CRADLE	MDC	MTEC	NTIS	Krafttagan Msia	MATRADE	MITF	KKDW	BPEK	MFDB	KKM & PMB
Initiatives	100 Go Digital (MDEC)	PEDi	Program Pemerkasaan Usahawan Wanita (PUAN)	Program Dropship dan Ejen (DNA)	#MyDigital Maker	SME Digital Accelerator Program	Bumiputera Enterprise Enhancement Programme	MyStartup Accelerator program	MDV COMMERCIALISATION FINANCING	Technology Advisory Service	National Technology & Innovation Sandbox Fund	Craft On The Go	eTRADE Programme 2.0	Soft Financing for Digital and Technolo	desamall	Smart Village Initiative	Incubator Virtualisation Model (IVM)	Pusat Internet Desa/Telecentre (PID)
	eUsahawan Hab						Digital Financing Initiative (Microleap)	MYStartup Bootcamp	MDV Liquidity Financing for Tech Start-ups	Technopreneur Training Academy		E-Kraf Bazar						
	eUsahawan Komuniti						Micro Connector Programme	MYStartup Dev	MDV TECHNOLOGY ACCELERATION			My Craft Shopee						
	eUsahawan Siswa							MYStartup Pre-Accelerator										
	Program e-Dagang																	
	Shop Malaysia Online																	

State Initiatives

Initiator	SDEC		SMA			MWCWBWFC & MDEC	MINTRED		MANRED	SECA & Swinb	TEGAS	SAINS	Timogah	UTS	WFDS	YPPB
Implementor	SDEC	SDEC, YPPB	SDEC	SMA	TEGAS	MWCWBWFC	NRDA TERAJU	SDEC	SAINS	Swinburne & SECA	Hills, WATS, RD	Spay, SAINS	Timogah	UTS &GDAIB	WFDS	TEGAS
Initiatives	Digital Accelerator Village	SME Digitalise!	Digital Innovation Hub	Digital Immersion Adoption	TEGAS Innovation Hub/Village	Digital Kenyalang	Anjung Usahawan	GoDigital	RiGHT	The Sarawak Digital Enabler	SAGO Incubator	dBazaar	Timogah Training	Chinese Cross Border E-Commerce Study Centre	eWanita	TEGAS Tech Immersion Prog
	Kamek Digital															