Reimagining Digital Marketplaces with Rural Micro-Entrepreneurs in Sarawak

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ABSTRACT

As digital marketplaces become increasingly central to contemporary economic exchanges, they are widely promoted as pathways for rural inclusion in the digital economy. Yet in many rural regions, particularly in developing contexts, micro-entrepreneurs continue to disengage from formal digital marketplace platforms despite growing connectivity, policy support, and platform availability. At the same time, digital innovation, particularly e-commerce platforms have not conventionally included rural micro-entrepreneurs as target users nor as design participants, further exacerbating existing digital divides.

This thesis examines how rural micro-entrepreneurs in Sarawak engage, reimagine, and disengage from digital marketplaces, and explains why such disengagement persists despite increasing institutional support and platform availability. It examines how local practices, entrepreneurship ecosystems, platform design logics, and rural micro-entrepreneurs' platform imaginaries interact to shape digital marketplaces participation. Adopting a critical realist approach that advocates methodological pluralism, this PhD utilised a range of research methods to understand the dynamics of rural micro-entrepreneurs' work in Sarawak, their everyday engagement and disengagement with digital marketplaces, and their reimagination of technology when co-designed from their epistemologies.

The methods incorporated in this thesis include: a mapping study of 150 digital entrepreneurship initiatives in Sarawak; 14 elite interviews with policymakers, platform executives, and ecosystem stakeholders; nine months of ethnographic fieldwork with 24 rural micro-entrepreneurs across five rural sites; and four participatory design workshops involving rural micro-entrepreneurs, community stakeholders and platform designers. Findings from each method were integrated through a morphogenetic/ morphostatic

framework to identify structural and cultural conditionings (T^1), social interactions (T^2–T^3), and outcomes of morphostasis/ morphogenesis (T^4).

The findings show that rural micro-entrepreneurship in Sarawak is organised around flexible livelihood practices, caring responsibilities, relational trust, moral economies and practical considerations that differ from the formal, scalable, and metric-driven logics embedded in digital marketplaces. Participatory design workshops further reveal alternative marketplace imaginaries centred on voice-based interaction, direct communication, seller presence, and embodied knowledge. The morphogenetic analysis demonstrates that disengagement is a rational outcome of structural misalignments between platform formalism, fragmented digital entrepreneurship initiatives, infrastructural unevenness, and locally situated economic practices. These misalignments give rise to generative mechanisms that produce recurring patterns of deferred participation, bounded adoption, resistance and rejection, and pragmatic appropriation.

Building on previous work on rural entrepreneurship, platform studies and human-computer interaction, this thesis provides a grounded account of rural micro-entrepreneurial life and digital engagement in Sarawak, contributing new empirical findings and theorising in digital marketplace design for micro-entrepreneurs in the region. Methodologically, it demonstrates how ethnography, participatory design, and critical realist explanation can be combined to integrate lived experiences and local imaginaries with causal analysis. Theoretically, it reframes digital marketplace disengagement as a structurally produced outcome rather than merely an individual deficit. It repositions digital marketplaces as socio-technical institutions that shape who can participate as a legitimate entrepreneur, and provide an explanatory account on why disengagement persists among rural micro-entrepreneurs with digital marketplace platforms.

This PhD further identifies implications for platform design, policy interventions, and ecosystem management that can better support and address the needs of rural micro-entrepreneurs, thereby facilitating their inclusive engagement in the digital economy through the participation in digital commerce.

List of Publications

This thesis comprises chapters that draw upon research previously disseminated through peer-reviewed journals and conference proceedings listed below.

1. Bong. Y., Harvey, J., Nica-Avram, G., Smith, G., Goulding., J. (2026, February) Multi-Dimensional *Predictors of Sharing Platform Growth: A Machine Learning Study.* International Journal of Market Research.

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3. Bong, Y., Cameron, L., Loh Chee Wyai, G., Marcarthy, S., & Harvey, J. (2024, August). Selling durian online? Reimagining digital marketplaces that embody and empower rural businesses. *In Proceedings of the Participatory Design Conference 2024- Volume 2 (pp. 198-202).*

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2. Harvey, J., Nica-Avram, G., Branco-Illodo, I., Gallage, S., Stride, C., Bong, Y., Smith, G., Smith, A., Goulding, J. *Social norms and their influence on food sharing platforms.* International Journal of Research in Marketing.

3. Haryati, N., Bong, Y. *Affective Orchestration: Emotion, Morality, and Innovation under Constraint: A Relational Perspective from the Cholula Marketplace, Mexico.* Subsistence Marketplaces.

"It's expensive to think.
It's expensive on the soul and the
body and the pocketbook
to spend your time thinking."

Ocean Vuong, author

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1

INTRODUCTION

Digital technologies have rapidly transformed the way goods, services, and information are exchanged, particularly through the rise of e-commerce and platforms of digital marketplaces (DMs). These platforms are increasingly seen as key enablers of economic participation, offering the potential to connect producers and consumers across geographical boundaries, streamline transactions, and unlock new opportunities for entrepreneurs (UNCTAD, 2019; Martin, 2016; Mei et al., 2021). DMs such as Amazon, Alibaba, Etsy, Shopee, and Lazada are framed as open, scalable, and inclusive infrastructures that lower barriers to entry and promote business growth, especially for micro and small enterprises (Tauscher & Laudien, 2018; Shah et al., 2018).

In Malaysia, digitalisation has been positioned as central to national economic development strategies. The MyDIGITAL blueprint, Shared Prosperity Vision 2030, and the Sarawak Digital Economy Strategy 2018–2022, each emphasise the transformative potential of digital platforms for encouraging digital entrepreneurship, particularly for traditionally marginalised communities. Accordingly, digital platforms, in their empowerment of communities in the digital economy, are viewed as enablers for reducing regional inequality and fostering innovation. These policy visions resonate with global development goals, particularly the United Nations Sustainable Development Goals (SDGs), notably Goal 8 (Decent Work and Economic Growth) and Goal 10 (Reduced Inequalities). Sarawak, as Malaysia's largest state by land area, has echoed such calls for digitalisation, viewing the digital economy as a path forward in modernising its extensive rural population and lagging development indicators (Tey et al., 2019; Solarin, 2021).

However, despite increased connectivity and significant investments in digital infrastructure, rural micro-entrepreneurs (RMEs) remain underrepresented in formal DMs (Cheuk et al., 2018; Mei et al., 2021). The uptake of digital technologies among RMEs is uneven and often short-lived, reflecting deep structural, infrastructural, social, and contextual barriers (Philip et al., 2017; Kumar & Shekhar, 2020; Abdul Ghaffar, 2022). While some digital applications have gained traction, such as social media and messaging apps, formal e-commerce platforms often struggle to embed meaningfully in rural contexts (Davies et al., 2013; Valchovska et al., 2013).

Scholars have also raised critical questions about the appropriateness, usability, and assumptions embedded in DMs (Grabher & König, 2020; Hobbis and Hobbis, 2023). Many platforms are conceptualised around a specific archetype of the entrepreneur-user, typically imagined as individualistic, growth-oriented, digitally literate, and market-responsive (Tauscher & Laudien, 2018; Van Dijck et al., 2018). Such imaginaries reflect the economic theories of Schumpeter (1934), Kirzner (1973), and Knight (1921), which centre on creative innovation, opportunity alertness, entrepreneurial agency, and risk-bearing. These assumptions, however, have been criticised for being shaped by WEIRD (Western, Educated, Industrialised, Rich, Democratic) cultural norms (Henrich et al., 2010) and may be misaligned with the lived realities of RMEs in developing countries.

The result is not only low adoption (Mei et al., 2021; Nipo et al., 2024), but a broader sense of disconnection and what Fricker (2017) termed *epistemic injustice*. By prioritising Western market logics, the platform effectively devalues or silences the indigenous epistemologies of everyday entrepreneurship in rural and indigenous contexts (Hobbis and Hobbis, 2023; Bong et al., 2025). Instead, RMEs are relegated to data points for platform growth rather than active agents with competing epistemologies (Fricker, 2017). This resonates with critiques from the fields of postcolonial computing and Information and Communication Technology for Development (ICT4D), which argue that technology systems often carry assumptions that marginalise non-Western users and devalue local knowledge (Irani et al., 2010; Alvarado Garcia et al., 2021; Winschiers-Theophilus et al., 2013). In these paradigms,

the rural is framed not as a frontier for innovation, but as a deficit to be corrected, a space that must "catch up" to urban norms of productivity, efficiency, and formalisation (Hardy et al., 2018; Avgerou, 2008).

DM, originally popularised by platforms such as Amazon and eBay (Reynolds, 2000; Nah and Davis, 2002), has emerged from a Western commercial lineage. Their design and operation have been shaped by Western economic and technocratic logics, influencing not only their functionalities and aesthetics, but also the broader socio-technical aspects that govern their development and use (Liao et al., 2009; Cutolo and Kenny, 2019). These inherited logics affect how value and trust are encoded, enacted through product specifications, metrics, and displayed imagery (Bong et al., 2025; Grabher and König, 2020). As a result, many DM systems reflect assumptions of individuality, urban connectivity, and persuasive consumer engagement, which often stand in contrast with non-Western or rural realities (Nkwo and Orji, 2018; Hardy et al., 2019; Kamutuezu et al., 2021).

In the Global South, where connectivity infrastructure and digital interventions evolve in complex and non-linear ways, RMEs operate at the intersections of traditional non-digital practices, infrastructural challenges, standardised platforms and an increasingly digitalised economy (Adnan et al., 2016; Nkwo and Oriji, 2018). For these communities, the risk of non-participation carries profound implications for business survival and livelihood (Modgil et al., 2022; Tabassum et al., 2023). Indeed, the doubled-edged sword of digital commerce offers opportunities for market access and diversification, while simultaneously threatening exclusion for those unable or unwilling to adapt. Supporting marginalised entrepreneurial groups, particularly RMEs, to have the capabilities and freedom (Sen, 1997) to engage in digital commerce is therefore an important and worthwhile endeavour.

1.1 PROBLEM STATEMENT

Digital transformation has been valorised as a central policy and developmental agenda across many developing countries, promising to

unlock the many affordances and advantages that digital technology adoption offers in transforming how businesses operate and create value. In the context of RMEs, a key expression of this transformation lies in e-commerce and the use of DM platforms. Heralded by the World Bank and the United Nations (World Bank, 2020; UNCTAD, 2019), e-commerce has been promoted as an innovative and empowering vehicle capable of transforming micro and small enterprises, particularly in rural and resource-constrained settings. This enthusiasm has shaped both national and local policy initiatives amongst government and non-government organisations (NGOs) alike, advocating initiatives to invigorate digital entrepreneurship through DM adoption.

As a developing nation with a significant rural population, Malaysia combines high internet usage (89.6%) and mobile penetration rates (98.6%) (Mahidin, 2022), with persistent income inequality, particularly across the rural-urban divide (World Bank, 2022). These conditions make it a suitable context for exploring how DM platforms impact rural micro-entrepreneurship. Despite so, evidence of how RMEs engage with DM platforms remains limited, particularly in low-resource, subsistence, and rural communities. An array of multifaceted factors, including infrastructure availability, policy coverage, platform accessibility, communities' digital literacy, and broader entrepreneurial support, continues to shape how DM platforms are encountered, experienced, and engaged with. Additionally, a range of stakeholders, including designers, executives, policymakers, and entrepreneurial support workers, also influences these interactions.

To date, studies on rural entrepreneurship and digital technology for rural communities in Malaysia have focused on technology readiness and adoption intention (Yusoff et al., 2021; Omar et al., 2022; Keiling et al., 2025), analysing barriers to use and proposing capacity-building measures as solutions. These approaches often overlook the design assumptions built into DM systems and fail to critically examine the design structure and logics that enable or constraint participation. In parallel, HCI and participatory design studies on RMEs have illuminated valuable local values and practices in improving technology design and use, but often stop short of addressing the broader structural conditions, such as policy discourse, ideologies of

entrepreneurship, culture of entrepreneurship training, and platform governance that underpin RMEs' interaction with marketplace technologies. Both approaches are valid in achieving the respective research objectives of either uncovering barriers to adoption or improving platform design, but are partial in their interrogation of why these tensions persist.

From a rural perspective, there exists a notable research gap in e-commerce research with digitally marginalised communities. In recent years, there has been a growing literature in HCI for seeing rurality as a site to *design from* rather than a site to *design for* or even *design away* (Hardy et al., 2019; Makoto et al., 2021). These reorientations acknowledge that rural communities, with their distinct infrastructural, technological, geographical, and social conditions, invite new ways of thinking about technological design and innovation (Makoto et al., 2021).

To that end, this PhD aims to understand how DMs are experienced by RMEs in Sarawak and why their engagements unfold as they do. Adopting the philosophical stance of critical realism, the study seeks to explore the situated practices and rationale of RMEs in everyday work and engagement with DM platforms, to uncover the broader mechanisms shaping RMEs' existing engagements with marketplace platforms, and to explore how platforms could be re-imagined if co-designed with RMEs themselves.

Employing a multi-method approach consistent with the methodological pluralism advocated within critical realism research (Archer, 1995), the research combines ethnography, participatory design workshops, and critical realist analysis. Ethnography provides the understanding of RMEs' everyday practices and meanings, while participatory design co-creates alternative marketplace imaginaries based on RMEs' local values and preferences. The critical realist framework then provides the analytical framework to explain the underlying causal mechanisms shaping RMEs' DM engagement to provide a grounded yet explanatory understanding of how RMEs' digital engagements are shaped, and how these insights can inform design and policy interventions that are more grounded, participatory and equitable.

Building on prior studies in rural entrepreneurship, platform economy and HCI (Dhaundiyal and Sharma, 2022; Grabher and König, 2020; Crabtree and Chamberlain, 2014), this research adopts a multi-disciplinary and exploratory approach to understanding the situated actions and socio-technical settings of RMEs in Sarawak. Over nine months of fieldwork, the researcher has engaged with RMEs across a range of industries, in multiple rural conditions, including accessible rural towns, rural villages, and remote highland communities. This plural approach enables both depth of understanding and explanatory reach, revealing how local practices, design imaginaries, and structural conditions shape digital engagement in Sarawak's diverse rural economy (Fidler, 1978; Cheuk et al., 2018; Keiling et al., 2025).

1.2 RESEARCH QUESTIONS

The overarching aim of the PhD is to investigate how RMEs in Sarawak engage, reimagine, and disengage from DM platforms, and to explain why such disengagement persists despite increasing policy support and platform availability. It seeks to understand how local practices, entrepreneurship ecosystems, platform design logics, and RME's platform imaginaries interact to influence DM participation and disengagement.

The research adopts an iterative and exploratory approach, which is consistent with both the critical realist ontology of the research that values methodological pluralism, as well as the complementary methodologies of ethnography and participatory design that value situated knowledge, reflexivity and collaboration with participants.

The questions are hence refined through progressive engagement with empirical data across the ethnographic fieldwork, participatory design workshops and the explanatory analysis. As such, this study is guided by the three main research questions below:

RQ1 *What does rural micro-entrepreneurship look like in Sarawak?*
Employing ethnographic fieldwork, the study examines how RMEs organise their everyday activities, navigate their environment and engage with digital tools and DM technologies.

RQ2 *How can digital marketplace platforms be reimagined with rural micro-entrepreneurs to more effectively reflect and support locally situated economic and social practices?*
The study uses participatory design processes to surface alternative imaginaries of digital commerce grounded in local epistemologies, culture, interactions and embodied practices.

RQ3 *Why do rural micro-entrepreneurs in Sarawak engage or disengage from conventional digital marketplace platforms?*
To foster digital inclusion and tackle rural digital inequalities, the thesis identifies the structural, cultural and agentic mechanisms that shape these patterns of engagement and analyses how these mechanisms can inform more contextually aligned policy interventions and platform design strategies.

These three research questions were selected because they account for multiple layers of analysis, in line with the *stratified ontology* within critical realism (expanded in Chapter 3.2). RQ1 examines the *empirical* by attending seriously to the everyday practices and emic accounts of RMEs *in situ*. RQ2 shifts the inquiry into design, by eliciting DM imaginaries co-created with RMEs in their settings, probing understandings of the *actual* through design prompts not obtainable by observation from RQ1 alone.

Finally, RQ3 queries the broader structural, cultural, and agentic dynamics of DM engagement, allowing inquiry into the *real* on why RMEs in rural Sarawak engage or disengage with platforms. The integration of these layers of inquiry through the critical realist stance enables a more comprehensive understanding of RMEs' engagement with digital technologies, while affording the interpretation of these experiences into deeper insights for designing and supporting more inclusive DMs participation.

The following section outlines the core contribution that arose from this multi-layer investigation.

1.3 STRUCTURE OF THE THESIS

This thesis will consist of nine chapters structured across three parts. Below is a short summary of the contribution of each chapter:

Part 1 - Background and Approach

Chapter 2 reviews the literature on rural entrepreneurship, DMs platforms in rural areas, technology design, global cases and Sarawak's past digitalisation literature, in establishing the conceptual foundation for understanding RMEs' engagement with DMs.

Chapter 3 outlines the methodology of this study, detailing the ontological underpinnings and the rationale for adopting a multi-method approach grounded in critical realism. Each method is detailed along with the data analytical strategy adopted.

Chapter 4 provides the contextual background on Sarawak's digitalisation landscape and entrepreneurship ecosystem. It includes the findings of the desk study, and details the practicalities of the research, including how access into the field was negotiated, how participants were recruited, along with the specific background of the five sites of research.

Part 2 - Empirical Findings

Chapter 5 presents the ethnographic findings on what rural entrepreneurship looks like in rural Sarawak, addressing RQ1. Findings were presented using the ethnomethodological framings of 'coat hangers' (Lynch & Garfinkel, 2022). The 'coat hangers' of which were used to 'hang' the data includes *micro-entrepreneur, business model, marketing, customer relationship management,* and *digital transformation.*

Chapter 6 discusses the four participatory design workshops conducted with RMEs in the co-designing of digital marketplace designs that reflect local epistemologies and values. The four workshops were designed based on the cultural engagement framework by Winschiers-Theophilus

et al. (2019), with adaptation to include 'futuring' methods by Muashakele et al. (2023) in answering RQ2.

Chapter 7 details the critical realist analysis by adopting Archer's (1995) morphogenetic/morphostatic framework to analyse the various data sources of this study. The chapter walks through the analysis from T_1 to T_4, and identifies mechanisms that shape RMEs' engagements and disengagements with DMs in rural Sarawak, answering RQ3.

Part 3 – Synopsis

Chapter 8 synthesises the insights across the preceding chapters, discussing the findings in relation to existing scholarship in rural entrepreneurship, platform economy and platform design. From there, implications for digital marketplace design, policy, and management are laid out.

Chapter 9 concludes the thesis and lists the main contributions of the study. The limitations of the research are reflected upon, followed by proposals for future work.

1.4 CONTRIBUTIONS

The thesis makes four main contributions:

1. **The first ethnographic account of rural micro-entrepreneurs in Sarawak, providing empirical findings of rural micro-entrepreneurship from the region, and which reframes digital entrepreneurship within this context**

   The thesis presents the first detailed ethnographic account of rural micro-entrepreneurship in Sarawak, revealing how digital marketplace technologies are engaged with, negotiated, resisted and reappropriated through the situated and relational practices of rural micro-entrepreneurs. These findings challenge dominant assumptions embedded in digital entrepreneurship discourse and digital marketplace models, offering a more substantive (Polanyi, 1944) and

grounded basis for entrepreneurship policy, platform design, and the entrepreneurship ecosystem development

2. **Advancing *rural computing* literature by recasting 'designing from the rural' to 'designing with the rural', by drawing from the *Cultural Engagement Approaches* from *participatory design* scholarship**

   This thesis advances *rural computing* scholarship by recasting its central framing of 'designing *from* the rural' by Hardy et al. (2018; 2019) to 'designing *with* the rural', and by proposing a *participatory design* framework in methodologically operationalising this framing. By adapting the *Cultural Engagement Approaches* (Winschiers-Theophilus et al., 2019), the thesis contributes a methodological approach that demonstrates how PD can meaningfully be adapted across diverse rural configurations, cultural contexts and digital literacy levels with micro-entrepreneurs from rural settings.

3. **Demonstrating the misalignments of existing digital marketplace design for rural commerce, and introducing pluriversal marketplace alternatives through co-design**

   Through participatory and speculative design workshops, the thesis exposes the Western-centric assumptions and design logics embedded in mainstream digital marketplaces, illustrating how they risk subverting existing local practices, values and modalities. Alternative digital marketplaces imaginaries rooted in rural micro-entrepreneurs' cultural, interactional and embodied practices were co-developed, offering a reimagining of what a digital marketplace can be when designed from local ontologies.

4. **Explaining digital marketplace platform disengagement among rural-microentrepreneurs through the morphogenetic/ morphostatic analysis**

   Using Archer's morphogenetic/ morphostatic framework, the thesis provides a critical realist explanation for rural micro-entrepreneurs'

disengagement from digital marketplaces. It identifies four generative mechanisms— contingent alignment, ineffective compliance, rational disengagement, and adaptive informalisation—that explains how disengagement is produced over time. This insight reframes deficit-based narratives about rural technology adoption as systemically produced through structural–cultural conditions and social interactions, providing implications to settings beyond Sarawak that holds similar contextual and mechanistic configurations.

5. **Mapping the digital entrepreneurship initiative ecosystem in Sarawak by adapting Isenberg's entrepreneurship ecosystem framework (2016)**

   Situated within Sarawak where digital entrepreneurship receives strong policy emphasis, supported with broad range of corresponding initiatives, the mapping adapted Isenberg's entrepreneurship ecosystem framework (2016) to conduct the first comprehensive study of the digital entrepreneurship initiatives ecosystem in the Sarawak. With the inclusion of target group mapping alongside the ecosystem domains, the study revealed significant fragmentation between initiators, and a marginalisation of rural micro-entrepreneurs.

Contribution 1 is discussed in Chapters 5 and 8; Contribution 2 in Chapter 6 and 8; Contribution 3 is mainly elaborated in Chapter 6; Contribution 4 in Chapter 7; and the fifth contribution is covered in Chapter 4 and 8.

1.5 CHAPTER SUMMARY

In summary, this first chapter has outlined the background of the study, the problem statement, research questions, main contribution and the overall structure of the thesis. It situates the study within broader discourses of rural entrepreneurship, the platform economy, and DM design, with a specific focus on RMEs' engagement, disengagement, and imaginaries of DMs in Sarawak. This study is significant in uncovering the empirical, actual and real layers of RMEs' encounter with digitalisation and DM platforms,

demonstrating that DM platform adoption in the rural is multi-faceted rather than linear, encompassing deeper design, policy and structural conditions that shape rural participation. These inquiries serve as crucial understandings for the reimagining of DMs for rural communities.

The next chapter turns to the literature review, which critically examines existing scholarship on DMs, rural entrepreneurship, and platform design. It highlights key theoretical and empirical gaps that underpin the need for this research and provides the conceptual foundations upon which subsequent chapters build.

PART I

Background and Approach

2

LITERATURE REVIEW

The continual global trend toward digitalisation in commerce has propelled digital marketplaces (DMs) into prominence as key platforms for the exchange of goods and services. Yet, these transformations unfold unevenly, particularly in rural and developing regions where infrastructures, social relations and historical conditions differ markedly from the assumptions embedded in mainstream DMs. This chapter reviews the interdisciplinary literature across rural entrepreneurship, platform studies, and Human-Computer Interaction (HCI) to understand these tensions and situates the study's contribution within them.

Organised around five complementary analytical lenses, this chapter provides a layered understanding through which rural digital marketplace engagement can be examined: (1) the socio-economic logics of rural entrepreneurship, (2) the institutional and architectural logics of digital marketplaces, (3) the epistemological and design orientations of technology development for marginalised communities, (4) comparative empirical cases of rural digital adoption, and (5) the Sarawak-specific digital context.

Collectively, these lenses move from socio-economic context (Section 2.1), to platform structure (Section 2.2), to design epistemology (Section 2.3), to cross-contextual empirical cases (Section 2.4), and finally to situated regional conditions (Section 2.5). These perspectives together support the three research questions: understanding rural micro-entrepreneurship practices

(RQ1), eliciting DM imaginaries and alternatives (RQ2), and explaining engagement or disengagement mechanisms (RQ3). The five sections of this chapters are as follow:

Section 2.1 reviews scholarship on rural entrepreneurship and technology engagement, highlighting key concepts such as embeddedness, place-based assets and constraints, subsistence marketplaces, which demonstrate how RMEs operate within distinct geographical, social, cultural and economic logics. The review points towards the need for more empirical understanding of rural entrepreneurial practices in Sarawak in answering RQ1.

Section 2.2 then turns to DMs, outlining platform architecture, economic assumptions and entrepreneurial archetypes. This section examines how platform logics, often individualistic and growth-oriented, shape the possibilities and constraints for entrepreneurs using them. It also reviews emerging critiques on design, platform power, and user precarity, which provides the conceptual basis for RQ3, which asks why RMEs engage or disengage from such systems.

Section 2.3 then shifts towards design literature to examine the design discourse on technology design for marginalised communities, specifically from Human-Computer Interaction (HCI), information communication technology for development (ICT4D) and postcolonial computing literature. This literature collectively challenges universal and techno-centric approaches to digital innovation. It draws attention to methodological and epistemological orientations that foreground local knowledge, values, and practices, informing RQ2, which focuses on reimagining DMs with RMEs.

Section 2.4 then examines global case studies of DM adoption across the Global North and South. These cases illustrate how platforms interact with diverse contexts, reinforcing the need for situated analysis rather than universal technology transfers. This comparative view positions this study on DMs in Sarawak within a broader global discourse on rural digitalisation.

Finally, Section 2.5 narrows the focus to Sarawak, reviewing existing research on digitalisation, ICT4D initiatives and rural technological engagement in the state. Despite increasing connectivity and sustained policy

enthusiasm for digital entrepreneurship, the literature reveals little empirical or design-oriented work on RMEs' engagements with DMs. The chapter concludes by synthesising these insights and identifying the conceptual and empirical gaps that motivate this thesis.

2.1 RURAL ENTREPRENEURSHIP AND TECHNOLOGY

Rural entrepreneurship has emerged as a distinct area of study in recent decades. The discipline concentrates on entrepreneurship research within specific contextual factors situated in rural areas, along with the constraints and opportunities characterising rural businesses. Despite so, much of the theorisation continues to draw from Global North studies, leaving Southeast Asia comparatively under-explored. This imbalance matters because the theorisation informs institutional logics that guide policymakers, funders, and development agencies, risking the application of frameworks that misalign with local realities. This section first examines the rural entrepreneurship literature to establish the key concepts within the field, followed by an analysis of the literature on technology adoption and transfer within rural entrepreneurship. This section will conclude by identifying the gaps in existing research that this study aims to address.

Rural Entrepreneurship

Scholarship on rural entrepreneurship has largely seen rural enterprises as important rural economy actors for income generation, providing employment for surplus labour from agriculture, reducing poverty and decelerating urban migration amongst rural communities (Lanjouw & Lanjouw, 2001; Sohns & Revilla Diez, 2017; Galvão et al., 2020). However, the nature of rural economy transformation is multifaceted and complex, differing from the specialisation and fixed notions of industry that urbanites often perceive (Ellis, 1998). According to Ellis (1998), household income strategies in rural life are often diversified across a range of livelihood activities. In developing countries, where agriculture is often the sole

employment option, rural households often face seasonality in their livelihoods (Chambers et al., 1981; Gittins and McElwee, 2023).

Having a diverse source of income from on-farm and off-farm activities is therefore typical among rural households, the latter often involving micro-businesses which sell products or provide services. Rural entrepreneurship can hence be a dominant driver of income diversity and an important local development technique to create jobs at low cost (Fortunato, 2014; Korsgaard et al., 2015a), while preserving and improving local resources and cultural heritage (Tregear, 2007; Kumar and Shekhar, 2020).

Defining micro-entrepreneurship in the rural

When narrowing the focus to rural *micro*-entrepreneurship, literature reveals no unified definition of what constitutes a micro-enterprise or who qualifies as a micro-entrepreneur, largely due to the varying industries, sizes and differing governing policies across countries. (Shah et al., 2018). Scholars and professional organisations have attempted to distinguish micro-enterprises through both quantitative measures and qualitative descriptions. The United Kingdom (UK) defines micro-enterprises as having an annual turnover of £632,000 or less, or having less than £316,000 in asset value, or employing fewer than 10 employees (GOV.UK, 2022). Asiedu et al. (2019), who research micro-entrepreneurship in Ghana, defined micro-enterprises as those having fewer than 10 workers and a total annual turnover of less than $100,000.

In a developing country such as Malaysia, they are defined as having an annual turnover of RM300,000 (£54,000) per year and employing fewer than five employees (SMECorp Malaysia, 2022). Others have characterised micro-enterprises in a more qualitative manner, describing them as being distant from markets and services, operating in settings with low population density, and usually being family-run (Bai et al., 2021). Furthermore, they are described as typically low in efficiency, running from individuals' residences (Mohanty & Mishra, 2020), usually operated out of necessity rather than opportunity (Duncombe & Heeks, 2002), and often share characteristics of the consumer-entrepreneur duality in the subsistence marketplace (Venugopal, 2016).

Embeddedness

Within rural entrepreneurship scholarship, the role of context and locality in relation to the entrepreneurship activity is often emphasised. A key concept commonly used is the term 'embeddedness'. Drawing from Granovetter's (1987) work on the embeddedness of economic activity within social structure, rural entrepreneurship scholars have extended the consideration of rural economic activity by examining its embeddedness within the social and geographical context where entrepreneurship is enacted (Stathopoulou et al., 2004; Korsgaard et al., 2015b). A key distinction, however, is developed in explaining this situatedness within the rural. Korsgaard et al. (2015b), in their seminal work, distinguish 'rural entrepreneurship' from 'entrepreneurship in rural areas'. The former consists of enterprises embedded within the environment of rurality, where its processes and resources are drawn from their specific rural sites, whereas the latter are enterprises purely operating from a rural area, with minimal integration to the rural resource and location.

Place-based assets and constraints

The embeddedness of rural businesses within their rural location has been shown to be both an enabling and constraining factor. Due to the dependence of local markets, resources and social relations, rural entrepreneurs have been observed to benefit from their proximity and familiarity to local social capital, market sensitivity and opportunities (Shao et al., 2021; Jack and Anderson, 2002). However, these place-based assets also have their constraints, as scholars note that dependence on local markets, norms, and resources makes it challenging for rural businesses to expand beyond immediate markets (Korsgaard et al., 2015b; Venkataraman, 2024). Other rural studies have detailed the challenges of human capital access, infrastructural deficits, and the digital divide (Hardy et al., 2019; Kumar & Shekhar, 2020; Abdul Ghaffar, 2022). Additional obstacles that have been studied that are unique to their settings also include geographic, social and institutional issues (Fortunato, 2014; Markley et al., 2015). These challenges that rural enterprises face are not only technical barriers, but also reflect a broader structural inequality between urban and rural areas.

Even so, scholars recognise the economic as well as non-economic contributions of rural enterprises, where, beyond mere job creation, they promote local resilience, social cohesion and social capital formation (Steiner and Atterton, 2015). This demonstrates that the sustainability of rural entrepreneurship has both economic and social importance to rural communities.

Despite this, rural enterprises cannot be understood as a homogeneous business entity. Aside from the variation in business domains and size, studies have shown that their contribution to the local rural region can vary. Building on Korsgaard et al. (2015b), Wilson et al. (2022) expanded their work by introducing a taxonomy of rural micro-enterprises' level of embeddedness, classifying rural enterprises into 'bedrock', 'anchored', 'disembodied' and 'perfunctory'. This typology distinguishes between enterprises that are deeply rooted in local knowledge, relationships, and market activity; those that are anchored locally with an outward orientation; those that are solely situated in a rural area without drawing from local assets; and those that have only superficial ties to the place (Wilson et al., 2022). This nuanced understanding challenges the assumption that rural businesses uniformly benefit their local communities.

Subsistence Marketplace, Informal Economy and Tribal Entrepreneurship

Drawing on scholarship from the subsistence marketplace literature, scholars have examined how micro-entrepreneurs are framed through a subsistence lens. Scholars like Viswanathan et al. (2008; 2017) show the need to understand micro-entrepreneurs in 'base of the pyramid' settings, through both an entrepreneurial and consumer perspective in framing actors as neither '*natural entrepreneurs nor passive victims'* (2017, p.1578). This duality of consumer-entrepreneur, as discussed by Venugopal (2016), involves people who often operate their businesses for subsistence purposes, providing for more immediate consumption needs rather than the separability and objectivity of an enterprise, as typically understood in the entrepreneur literature.

> *"Therefore, in subsistence marketplaces, the individual psychological disposition to perceive interdependencies between different facets of life, in conjunction with undifferentiated institutions that govern seemingly different facets of life, give rise to the consumer-entrepreneur duality." – (Venugopal, 2016, p.9)*

These understandings provide the needed lenses to view *bottom-up* innovation and practices that mix subsistence logic, consumption constraints, limited resources and traditional knowledge in operating rural businesses (Hota et al., 2019; Venugopal and Viswanathan, 2015). Entrepreneurs in these low-resource contexts often produce locally relevant solutions. Common practices engaged include what Baker and Nelson (2005) call *entrepreneurial bricolage,* the practice of "making do" by assembling locally available resources, relationships and knowledge to solve problems under conditions of scarcity (Esnart, 2019; Flaminiano, 2024). Such solutions may not have scalable commercial value as would traditionally be understood, but are argued to be a crucial alternative to institutional top-down approaches, which can often be overly 'paternalistic' as described by Cheng et al. (2017) in their study of the top-down Chinese entrepreneurial support initiatives.

Rural entrepreneurship has also been studied through the lenses of the informal economy (Hart, 1973) and the substantive economy (Polanyi, 1944). The former refers to economic activities that fall outside formal regulatory, legal, or institutional structures; while the latter, which has been contrasted with the formalist conception of markets, describes economic action as embedded in social relations, moral obligations and cultural norms (Polanyi, 1944). The formalist view, rooted in neoclassical economics (Smith, 1776; Robbins, 1932), posits that individuals behave as utility-maximising agents who respond rationally to market supply and demand driven by the 'invisible hand' of the market.

Within the informal economy that parallels subsistence marketplace settings, economic relations are instead organised around social networks, kinship ties and moral obligations (Granovetter, 1985; Hann and Hart, 2011; Viswanathan et al., 2014). Instead of seeing trade as purely transactional of goods or services, the substantive economy demonstrates alternate framings of such relationships, one that centres reciprocity, gift-giving, and the maintenance of

social ties (Mauss, 1954; Gudeman, 2001). Such relational logics often come into tension with digital technologies introduced into these settings, which invariably embeds formalistic market assumptions, including individuality, scalability and competition (Grabher and König, 2020), creating mismatches that can reshape local commercial practice, leading to the marginalisation of more culturally grounded forms of commerce (Bong et al., 2025).

Within tribal entrepreneurship scholarship, enterprise formation is increasingly recognised to be constituted by cultural identity and intergenerational knowledge transfer (Mika et al., 2017; Hazarika & Goswami, 2018), emerging less from opportunity-driven motivation than from constrained livelihood conditions (Motha, 2016). Enterprises within these contexts similarly concentrates in traditional, labour-intensive sectors, and faced structural and institutional barriers reported in rural entrepreneurship and subsistence marketplace literature. These includes limited credit access (Hazarika & Goswami, 2018), geographic remoteness and weak market linkages (Motha, 2016) that restrict tribal entrepreneurs from scaling beyond subsistence-level operations. As a result, tribal entrepreneurs continue to be underrepresented in larger enterprise segments relative to their population share (Sahu, 2021). More recent scholarship has shifted from these deficit-oriented accounts toward frameworks that foreground indigenous knowledge as productive assets, arguing that interventions must mobilise community wisdom rather than imposing externally designed solutions (Parthiban et al., 2024; Mika et al., 2017).

Challenges and Opportunities with Digital Engagement

Traditionally an agrarian-based economy, rural economies today are increasingly multifaceted. As connectivity and digital technologies expand across rural regions in the Global South, a myriad of opportunities and challenges emerge, giving rise to what has been termed the rural digital economy (Philip et al., 2015).

Scholars in rural entrepreneurship generally regard digital technologies, or information and communication technologies (ICT), as having the potential

to stimulate rural economies, enhance community resilience, and promote social and economic inclusion (Savira et al., 2025; Fahmi and Savira, 2023). At a fundamental level, digital technologies are seen to reduce informational asymmetries and transaction frictions within geographically dispersed markets. Jensen's (2007) study of mobile phone adoption in Kerala's fisheries sector for example, demonstrates how access to real-time price information significantly reduced price dispersion, eliminated waste, and improved both producer profits and consumer welfare. In this sense, digital technologies can enhance allocative efficiency and market transparency, particularly in fragmented rural economies where information has historically been costly.

Beyond information efficiency, ICT also enables new forms of collaboration and coordination. Demonstrated by Jha et al. (2016), ICT platform was shown to progressively integrate multiple rural actors: farmers, micro-entrepreneurs, NGOs and government agencies into a mutually reinforcing ecosystem. As opposed to functioning as a standalone technological intervention, the platform facilitated collaboration and broadened service offerings, which demonstrates the coordinating capabilities of digital technology in linking distributed actors and activities.

The introduction of e-commerce platforms in rural regions has further accelerated livelihood diversification across multiple sectors, including agricultural produce, tourism, transportation and logistics services, and short-term rentals (Li, 2017, Wang et al., 2021). Such development offer RMEs opportunities to access wider markets, improve promotional and marketing effectiveness, and reduce transaction costs (Shah et al., 2018).

However, sustained engagement of digital technologies depends on more than technological availability. Ferdous et al. (2024), in their study of post-adoption behaviour in B2B subsistence marketplaces, found that continued engagement is shaped by relationship-building efforts, particularly customer development support. At the same time, transactional-oriented promotions negatively affect user engagement. These findings underscores that the opportunities afforded by ICT are closely tied to the relational conditions that sustain post-adoption use.

In addition, digital engagement in rural settings have been linked to wellbeing outcomes. Akareem et al. (2021) demonstrate that subsistence consumers' engagement with a patient portal positively relates to wellbeing, with effects strengthened by service provider support and weakened by medical mistrust. Similarly, Venkatesh et al. (2020) find that ICT health kiosk use in rural India was associated with increased seeking of modern medical care, influenced by users' network structures, particularly weak-tie centrality. Taken together, these studies suggest that digital engagement has substantive potential in rural contexts but are contingent upon relational, structural and institutional conditions, considerations that complicate the broader narrative of rural digital transformation.

Simultaneously, existing literature has equally detailed a range of challenges faced within the rural digital economy. The digital divide is a major challenge, which encompasses physical infrastructure, digital literacy and cultural factors (Sparks, 2013) leading to further digital exclusion, which correspondingly extends into economic and social exclusion (Philip et al., 2017).

> *"…the continued existence of a digital divide, however defined, is an obstacle to any agenda of social inclusion. If societies are today partly, and will in the future be more or less completely, structured around the internet, then the demands of economic efficiency as well as social and political equity require that no social group finds itself excluded from participation". (Sparks, 2013, p.29)*

In a systematic review of digital and rural development in the Global North, Salemink et al. (2017) identified two main issues within rural digital divide. The first pertains to connectivity, which highlights the availability, quality and provision of internet infrastructure in rural regions. The second relates to inclusion, which involves the adoption and use of technologies hindered by severe neglect of local appropriateness and the generally lower literacy and digital capabilities among rural communities (Salemink et al., 2017).

These two dominant challenges of the rural digital divide have been extensively documented, particularly in developing countries where access to digital connectivity and infrastructure is still being developed (Kumar &

Shekhar, 2020; Abdul Ghaffar, 2022). The inclusion angle, however, is less prominent in literature, with accounts for rethinking technology inclusion mainly coming from STS or HCI literature. Scholars like Hardy et al. (2019) highlight the lower levels of digital literacy among rural demographics and recognise that geographical remoteness in these areas that makes connectivity even more essential. However, instead of only focusing on policies on connectivity or provision of capacity training, Hardy et al. (2019) critically question whether digital technologies themselves need to be redesigned for not just inclusion purposes, but an exploration of rural innovative technologies, which is termed '*rural computing'*. This echoes the works of Irani et al. (2010) in postcolonial computing, which will be dived deeper in the following sections.

In Malaysia, studies on RMEs have largely relied on survey or interview-based approaches grounded in less-contextual theoretical frameworks such as institutional theory, stakeholder theory (Keling et al., 2025), or adoption models like Technology Acceptance Model and UTAUT (Omar et al., 2022). Existing studies have primarily focused on digital technology adoption, motivation, barriers and evaluation (Cheuk et al., 2018; Ramli and Williams, 2024; Ashari et al., 2023; Tabassum et al., 2023). These studies uncovered challenges generally faced by micro-enterprises, such as management, sales and marketing, and market competitiveness (Jamak et al., 2012). While such approaches contribute valuable insights, they offer a partial view by privileging behavioural predictors over broader structural barriers such as platform design, as well as overlooking the reflexivity of actors and communities towards these structural considerations.

Section Summary

In summary, the literature shows that rural micro-entrepreneurship is shaped by embeddedness, situated logics, and place-based configurations, producing distinctive patterns of organising entrepreneurship. These insights emphasise the complexity of rural entrepreneurship, situated in diverse geographical, infrastructural and social settings. By extension, the digitalisation rural

microenterprise would likewise vary according to locally grounded socio-economic considerations.

Despite this, empirical research on rural micro-entrepreneurship in Southeast Asia, particularly in Sarawak, Malaysia, remains limited. Existing studies seldom attend to the everyday practices, improvisation, and cultural meanings through which RMEs engage with or disengage from digital technologies. At the same time, current literature on of rural digitalisation seldom focus on the inclusivity of the technologies themselves, focusing more on the availabilities of technologies in the rural.

Advancing the field, therefore, requires interdisciplinary and multi-method, not least more grounded approaches, that better foreground the digitalisation of rural micro-enterprises with the diverse lived realities of RMEs. Having established the characteristics of rural micro-entrepreneurship and digitalisation, the review now turns to the technology central to this research—DM platforms.

2.2 DIGITAL MARKETPLACE PLATFORMS IN THE RURAL

Defining Digital Marketplaces

DM platforms have emerged as essential infrastructures for contemporary e-commerce, acting as intermediaries that facilitate exchanges between producers and consumers through digital interfaces. The United Nations Conference on Trade and Development (UNCTAD, 2019) categorises digital platforms into goods-oriented and services-oriented models (Figure 2.1). Goods-oriented models include Amazon, Alibaba, eBay, Jumia, and Lazada, while service-oriented platforms include Airbnb, Deliveroo, Fiverr, MTurk and Grab.

These multi-sided technological companies provide an avenue for matching demand and supply from multiple independent actors, often providing integrated services such as logistics, payment processing and customer ratings (Tausher and Laudien, 2018). DMs also exist across diverse models, including online exchange markets, sharing economy platforms, crowdsourcing, and peer-to-peer (P2P) lending. Prominent DMs such as the

ones mentioned above, cross industries and include online shopping, s, transportation and accommodation services. Tauscher and Laudien (2018) provide a summary of digital platform business models (Figure 2.2), which vary from efficient product transactions to peer-to-peer offline services.

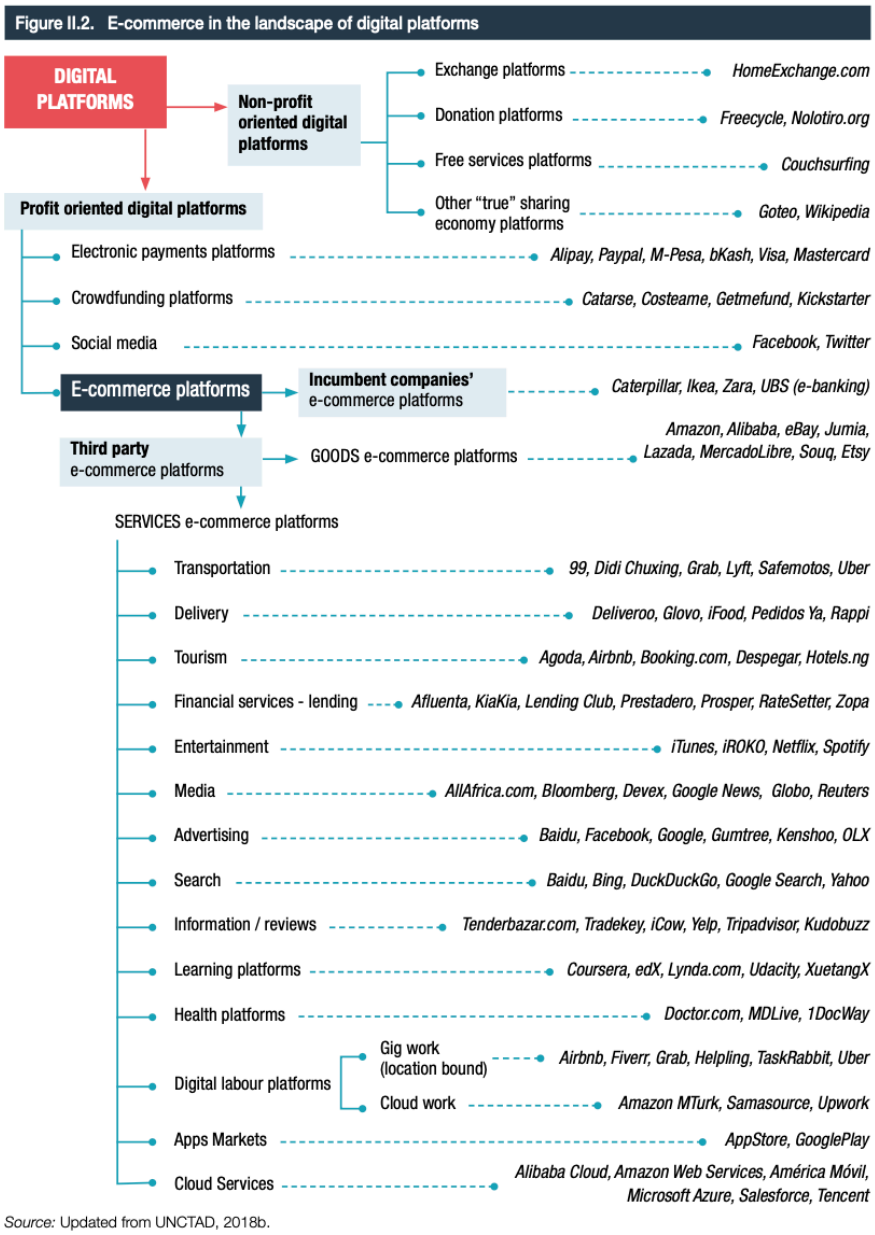


Figure 2.1 – Digital Platform taxonomy (UNCTAD, 2019).

Summary of business model types.

Business model type	Platform type	Platform participants	Value proposition	Transaction type & good	Revenue model	Example
Efficient product transactions	Web-based platform	C2C, B2B	Large product variety	Physical products	Commission fee, subscription fee; mostly supply side	*Beepi* (eBay for used cars)
Digital product community	Web-based platform	C2C	Being part of a primary non-commercial community	Digital products; physical products	Commission fee; supply side, demand side	*Sellfy* (connecting 'neighbors' to share durable goods with each other)
Product aficionados	Web-based & mobile platform	B2C, C2C	Exchanging knowledge about niche products with community of like-minded people	Physical products	Commission fee; supply side	*HobbyDB* (Knowledge database and transaction platform for collectibles)
On-demand offline services	Web-based & mobile platform	B2C	Large service variety in a novel form	Offline services	Commission fee, subscription fee; mostly supply side	*StyleSeat* (connecting beauty salons & consumers)
Online services	Web-based platform	C2C, B2C	Novel online services with social networking character	Online services	Commission fee, subscription fee; mostly supply side	*iTalki* (connecting language learners with teachers for 1-on-1 online lessons)
Peer-to-peer offline services	Web-based & mobile platform	C2C	Novel services with community feeling within & outside digital platform	Offline services	Commission fee (demand & supply side), subscription fee (third parties)	*Airbnb* (connecting people to list, discover, and book private accommodations)

Figure 2.2 – Digital platform business models (Tauscher and Laudien, 2018).

Within DM platforms, the P2P models have increased in popularity in the past decade. P2P platforms are digital technologies that enable transactions and exchanges amongst peers in a horizontal social relationship. The rise of P2P platforms, along with the affordability of powerful mobile devices, has allowed millions across the world to participate in the 'sharing economy' or 'collaborative consumption' (Barnes & Mattsson, 2016). The emergence of P2P platforms which span across a wide range of industries including retail, transportation, accommodation, catering, and energy has radically changed the way we exchange, buy, sell, rent and manage goods and services (Akhmadi & Pratolo, 2021; Hawlitschek et al., 2018; Sousa et al., 2019).

The Development Promise of Platforms

As uptakes of these platforms become mainstream, these platforms have become central to discourses of economic development and digital inclusion. Governments and intergovernmental institutions frequently frame DM companies as accessible and empowering tools. As highlighted in the UNCTAD (2019) report, platforms are seen to improve market access and operational efficiency, while also facilitating value creation and growth for micro and small enterprises, thereby validating greater engagement (Shah et al., 2018). The World Bank has also heralded 'Taobao village' models in China, a rural phenomenon of revitalising rural villages through e-commerce adoption, as an innovative and inclusive strategy for tackling poverty (World Bank, 2016, p.10).

The technological affordance of connecting the supply of sellers of various sizes with the demand from scattered buyers within virtual 'marketplaces' indeed provides unprecedented access to participate in the local, national and international markets of trade, cutting across a myriad of platforms including DMs, social media and other sharing-enabled applications. These forms of digitally exchange platforms are seen as an opportunity extension for the 'emancipatory potential of entrepreneurship' (Rindova et al., 2009) in the digital economy, and a means towards a more decentralised and equitable economy (Martin, 2016).

Other benefits also include increasing workers' agency of work, and providing income or subsistence (Martin, 2016). According to Harvey et al. (2014), additional benefits include a more prosocial means to participation in the economy. For RMEs in rural developing communities, Delacroix and colleagues (2019) argue that participating in DMs can provide further access to social capital brought about by the physical and socio-cultural proximity between buyers and sellers.

Despite the optimistic view of the potentials of DMs, there is an increasing body of literature raising concerns about the monopolistic nature of platforms, or the inequalities that may exist or be further perpetuated because of their design, adoption or use. *Airbnb*, for example, one of the largest accommodation DM platforms, has been found to exacerbate existing inequality. Researchers of Airbnb in Iceland for example, discovered that tourism income from the platform largely benefited already wealthy hosts who have large homes for rent, rather than being a distributor of benefits to the broader community (Mermet, 2021). Lower-income hosts benefited less from such platforms, reporting lower earnings or being impacted by rising property prices due to the profitability of the digitally-enabled private holiday rental market.

This is echoed in earlier research by Roelofsen (2018), who investigated the social and spatial inequalities of Airbnb in Sofia, Bulgaria, and discovered that Airbnb worsens an already unequal private holiday rental market, favouring a select group of hosts in areas that are already highly concentrated with official tourism accommodation and attractions. Several studies have also questioned the standardised pricing models, rigid sales timelines, and competitive algorithms that failed to reflect the relational and place-based nature of local businesses (Bai et al., 2021; Mohanty & Mishra, 2020).

Platforms as 'Gods'

Beyond their provision of transactional functionality, DMs are also seen as socio-technical systems that encode values and assumptions about system design, economics and their users. As Langley and Leyshon (2017) caution, the profit-driven and growth prioritisation logics of e-commerce platforms

have significant implications for their users, where participation is governed through platform-imposed algorithms and operating mechanisms. These largely invisible digital infrastructures often hold epistemological leanings that warrant further probing (Star, 1999; Grabher and König, 2020), especially when they 'travel' to various contexts that are distant from their location of design (Irani et al., 2019).

The power that platforms yield in this regard risks becoming monopolistic and rent-seeking, rendering them 'platform gods', as Cutolo and Kenny (2019) sarcastically refer to them as. DM companies, where the main players are among the wealthiest companies globally, hold an enormous imbalance in power when compared to their typical entrepreneur-user (Nambisan, 2017; Autio et al., 2018). Entrepreneurs on DM platforms are vulnerable to precarity as their businesses are dependent on platforms in a 'unilateral, largely irresistible, and often unappealable' relationship (Cutolo and Kenny, 2019, p.4), while susceptible not only to activity surveillance but also subjected to the risk of asset loss if any removal decision were made by the platforms (Zuboff, 2019).

Similarly, Kenney and Zysman (2016) argue that digital platforms fundamentally restructure value creation and labour through algorithmic and digital infrastructures. This allows platform owners to control the terms of participation while relegating producers to precarious, contract-based roles. These studies highlight how dominant DMs are designed to centralise power at the expense of entrepreneur autonomy and their ability to negotiate meaningful participation.

Digital Marketplace and Economic Framework

Within these powerful socio-technical platforms, it is therefore important to assess the prevailing ideological assumptions embedded in current DM platforms, as they directly influence the definition and regulation of acceptable and profitable economic behaviours. These assumptions can be better understood by drawing on literature from the digital entrepreneurial

ecosystem (DEE), where Sussan and Acs (2017) distinguish between Schumpeterian and Kirznerian entrepreneurial logics within digital platforms.

The Schumpeterian entrepreneur (1934) is portrayed as creators of new digital platforms (Bejjani et al., 2023; Paredes-Frigolett and Pyka, 2022), innovators who introduces novel combinations of technologies, services or markets that disrupt the status quo through *creative destruction*. This framing aligns with the start-up and innovation-driven narrative of DM platforms, where success is tied to novelty and scalability. By contrast, Kirznerian (1973) entrepreneurs are those operating within existing platforms, *alert* to emerging opportunities and changes in market conditions. DMs reinforce this Kirznerian logic through algorithmic infrastructures such as real-time analytics, dashboards, search trends, and performance rankings, encouraging and assuming sellers to continually adapt to maximise returns (Sussan and Acs, 2017).

Underlying these entrepreneurial framings are deeper economic ideologies that tend to lean neoliberal and formalistic (Paredes-Frigolett and Pyka, 2022). Through these ideals, entrepreneurs are cast as self-enterprising agents who constantly seek out efficiency and are competitively driven on these platforms (Christianes, 2020; Nambisan et al., 2019). This alignment between platform logic and neoliberal values means economic interaction is treated as individual calculation and competitive cost-benefit rationality, with little consideration for the relational or substantive forms of exchanges (Grabher and König, 2020). Although micro-entrepreneurs in subsistence settings have indeed been described as Kirznerian entrepreneurs, attending to their alertness to local opportunities (Venugopal, 2016), the applicability of the similar entrepreneurial groups on DM platforms is unclear. The consequence is that the DM becomes a site where certain economic ideologies are operationalised and legitimised, influencing how entrepreneurs view value and legitimacy in digital entrepreneurship (Vogel, 2020; Blakely, 2019).

Misalignment with the Realities of Rural Entrepreneurship

The ideological assumptions in DMs that centred on neoliberal and formalist ideals often stand in tension with the lived realities of rural entrepreneurship.

When these ideals are translated into rural communities via platform adoption, they risk producing unintended consequences.

A growing body of work in the rural digital economy literature points to the boarder socio-economic impacts surrounding the diffusion of DMs in rural areas. The adoption of platform-based commerce has been linked to successful rural digitalisation efforts, but also equally disruption of locally mediated trust (Wang et al., 2021), urbanisation of villages, transformation of livelihood patterns and schedules, and institutionalisation of rural life where work and personal time become increasingly entangled (Lin et al., 2016). Further, in their study of the emergence of *Taobao villages* in China, Yu and Cui (2019) questioned the meaningful impact this economic success has on the cultural and political impact on female entrepreneurs. Despite the rhetoric of digital inclusion and empowerment (World Bank, 2016; Tech for Good Institute & Bain & Company, 2021), it is highlighted that women entrepreneurs remained vulnerable to capitalist exploitation and cultural marginalisation despite the outward success of Taobao villages, showing that there are deeper structural mechanisms that warrant investigation in understanding the impact of DM platforms in rural areas.

Logistics and transportation for rural and remote areas remain key challenges, evident even within a state-driven context. The success of Taobao villages such as Zhili and Yiwu, which are exemplary villages, remains largely attributed to their proximity and to pre-existing industry clusters that are specialised in production and markets (Ding, 2012; Wang et al., 2021). The sustainable issues of talent recruitment, innovation, homogenisation and competition need to be contemplated beyond the Chinese context (Li, 2017). These findings emphasise that sustainable digitalisation of commerce in rural regions depends as much on social and institutional infrastructures as on the availability and accessibility of technology platforms (Kwong et al., 2011; Wahab, 2019).

In Southeast Asia, Ayob (2021) shows that e-commerce adoption among ASEAN countries varies systematically by education, income and cultural values. By analysing data from six developing countries in ASEAN, it was

found that adoption of e-commerce was more active among by individuals with higher educational levels and income, younger people, and in countries characterised by high individualism, low masculinity, and low uncertainty avoidance (Ayob, 2021). These characteristics mirror the user archetypes discussed previously that are implicitly assumed in platform design, raising critical questions regarding whose participation is enabled and whose is excluded in the design and usability of e-commerce platforms. Large segments of the rural population, often older, less formally educated and embedded in collectivist networks, remain peripheral to digital technologies (Asiedu et al., 2019; Su et al., 2021).

Consequently, research on RMEs' use of DMs must attend to the intersection of the social, technical and geographical. As described by Crabtree and Chamberlain (2014), conventional digitalisation projects risk linking digital adoption with growth and market expansion, overlooking what actually motivates RMEs. Their ethnographic study of Welsh RMEs revealed that these entrepreneurs often prioritise community reciprocity over profit maximisation. Similarly, Galloway and colleagues (2011) observed that rural firms in Scotland, contrary to the narrative of accessing broader and external markets, benefited most when using digital portals to reach both local and external markets. These studies suggest that DM design must recognise the plurality of economic logics and account for more diverse ways of enacting digital commerce (Bong et al., 2025), where local values coexist with, or even outweigh, conventional platform logics.

Section Summary

The preceding discussion highlights how dominant platform models, rooted in neoliberal and formalist economic logics, often overlook the embedded and place-based nature of rural enterprise. Such models assume uniform entrepreneurial motivations and universal market rationalities, producing mismatches when transposed into contexts where the organisation of buying and selling are more plural and locally grounded.

These tensions point to the need for DM research to examine not just the technicalities of making DM available, but also the social, geographical and

economical aspects of rural realities. The literature also highlights the need for an alternative design orientation that begins from the lived realities and practices of RMEs themselves. The following section examines literature on technology design that emphasises local knowledge and epistemologies in supporting the reimagining of DM that are more aligned with RMEs. To ascertain how more appropriate and culturally grounded marketplace technologies might be designed, the review turns to scholarship in HCI, ICT4D and participatory design, which offers insights into designing technologies with and from the communities they aim to serve.

2.3 “DESIGNING FROM THE RURAL”

A growing body of literature argues that the limited technology adoption in rural regions, especially in developing countries, stems from the absence of a local perspective in design (Kumar and Shekhar, 2020; Sultana et al., 2018; Wyche et al., 2015). These examples of prior research point to what a rising proposition in the literature coined as “designing from” the rural (Hardy et al., 2018). Inspired by postcolonial and feminist computing scholars, researchers of rural HCI have over the years advocated for more research that places rural communities as a source of technological innovation, rather than the periphery of the tech movement (Hardy et al., 2018; Su et al., 2021). The authors argue that rural areas could offer novel insights on technological design topics such as privacy, location, space and values, in redrawing the diverse possibilities of infrastructure and technologies (Hardy & Wyche, 2019; Räisänen & Tuovinen, 2020).

In this section, the history of design studies and Human-Computer Interaction (HCI) is briefly introduced, followed by a review of existing literature on digital technology diffusion and co-creation. This is followed by the examination of *postcolonial computing*, a seminal theoretical framework within the field of technology design for rural studies. This section then concludes with the main methodological frameworks of rural technology studies, pointing out how these frameworks inform this thesis.

Design Studies and Human-Computer Interaction

As computers became ubiquitous and pervasive in everyday life, research in HCI has gradually expanded beyond ‘workplaces’ and into the ‘real world’. This shift, often described as HCI’s ‘turn to the social’, emerged in the late 1980s as researchers began to study how technology is used in the everyday social world (Crabtree et al., 2012). Scholars have described the evolution of in successive waves: the first focused on usability and human factors; the second on situated actions and collective interactions in everyday settings; and the third on the personal, cultural, experience and meanings of technology (Bødker, 2006). Through these waves, the importance of understanding technology *in context* is gradually becoming central to HCI research. These correspond with the increased uptake of participatory methods that actively include users’ values, experiences and knowledge, as recognised by Bødker (2015) a decade after coining the terms *HCI waves*.

Despite this widening of scope, the majority of HCI research remains focused on urban, metropolitan settings and the relatively affluent and technologically sophisticated users (Su et al., 2021). These settings are often referred to as WEIRD (Henrich et al., 2010), where 73 percent of HCI work published in its premium venue, Conference on Human Factors in Computing Systems (CHI), is drawn from studies of the WEIRD population despite accounting for only 12 percent of the global population (Linxen et al., 2021). The remaining 88%, residing in what are increasingly call GREAT (Growing, Rural, Eastern, Aspirational, Transitional), is still largely understudied in computing and platform studies (Karhade and Kathuria, 2020).

HCI in the Rural, an Understudied Domain

Rural users, who make up approximately 3.4 billion people, or 44 percent of the world’s population (World Bank, 2020), remained markedly underrepresented in HCI research. They are rarely considered as sources of design innovation, and more often viewed as a problem that needs to be ‘designed away’ (Hardy et al., 2019). However, within what Hardy et al. (2018) term *rural computing*, a growing body of scholarship has begun to

explore how digital technologies are used, adapted and designed in rural contexts. This work is evident within the fields of HCI for Development (HCI4D) and Information and Communication Technologies for Development (ICT4D), which bridge computing, social science and development studies.

Scholars have long called for more localised understandings of technological design that attend to the multiplicity of cultural, infrastructural, and economic settings in which technologies are deployed (Irani et al., 2010; Yang & Chiu, 2022). Community-based design studies have similarly argued for greater inclusion, access and plurality in technological design (Cambre and Kulkarni, 2019; Devanuj and Joshi, 2013), while research in HCI underscored the need to engage with the social, material, and culture diversities of both users and non-users through a variety of methods (Goffman, 2023; Haas et al., 2022).

Areas of research within these fields cover a wide range of disciplines and cut across multiple stakeholders in rural or low-income settings. These areas span diverse domains, including agricultural technologies for farmers (Jones-Garcia & Krishna, 2021), digital tools for health and nutrition (Egede et al., 2021), and systems for managing and sharing indigenous knowledge (Winschiers-Theophilus et al., 2013). In addition, educational technologies for rural training and up-skilling (Markley et al., 2015), mobile money and digital finance inclusion (Engelmann et al., 2019), and information technologies that support RME (Crabtree & Chamberlain, 2014) have also been explored in the literature. These studies signal a shift toward recognising the rural not merely as a site of technology deployment, but as rich contexts where practices and local knowledge are explored as design possibilities.

Digital Diffusion vs Digital Co-Creation

It is useful to distinguish between research that examines digital diffusion, and those focusing on digital co-creation. The former tends to emphasise how technologies are transferred from urban to rural contexts (Shih et al., 2008; Balkrishan & Joshi, 2013; Alkhalifah et al., 2017). In contrast, co-creation studies foreground *in situ* perspectives and utilises the context of rurality as an arena for digital innovation (Peters et al., 2014; Uchidiuno et al., 2018;

Lember et al., 2019). Furthermore, research in rural HCI highlights how the social, cultural and infrastructural realities of rural life differ from urban settings, marked by limited internet access, geographical isolation, and strong community ties shaped by local culture and values (Davies et al., 2013; Zaman & Winschiers-Theophilus, 2015; Hardy et al, 2019).

Much of this work adopts participatory and community-based approaches, engaging local actors and communities as co-designers and drawing upon situated logic and forms of knowledge that challenge Western-centric assumptions (Pickering, 2017). Moreover, the United Nations Development Programme (UNDP, 2022) stresses the urgency for adopting ‘people-centered’ and ‘inclusive’ approaches to digital innovation, with a strong emphasis on the needs of the poorest and most vulnerable. The UNDP (2022) strategy report highlights the urgency of closing the digital divide and the need to ensure digitalisation does not exacerbate existing inequalities, especially among women and marginalised people groups.

Techno-centricity and Postcolonial Computing

While global agendas for inclusive digitalisation emphasise closing the digital divide and ensuring that technological advancement benefits the most vulnerable, scholars in HCI have cautioned these grand visions of technocratic solutionism. The classic case of the ‘one laptop per child’ (OLPC) initiative, conceived through a similar globalised vision of empowerment through technology by the former director of the Media Lab in Massachusetts Institute of Technology (MIT), served as a cautionary tale (Kraemer et al., 2009). Targeted at reforming education around the world by providing low-cost, $100 laptops to children in developing countries (Warschauer and Ames, 2010), the ‘utopian’ initiative demonstrated minimal to no advancement in learning, highlighting how technocentric, top-down approaches to social issues frequently overlook complex and localised needs and challenges.

Emerging from these concerns, Irani et al. (2010) introduced the term ‘postcolonial computing’ to describe how technologies created in one context are transferred into various environments with distinct technological, cultural,

infrastructural, and economic characteristics. This can be seen through the variance of technology usage patterns, graphic user interface recognition and technological language across different cultural contexts (Merritt & Bardzell, 2011). HCI research has often normalised Western knowledge as universal while treating non-Western findings as exceptions (Kou et al., 2018). This tendency produces homogenised accounts of users that consequentially average their traits across a single cultural model, overlooking how design research and practice are themselves shaped by culture and power (Lazem et al., 2022). Postcolonial computing hence calls for sensitivity to local meanings, infrastructures, and historical conditions rather than assuming universal models of technology use (Escobar, 2018; Linxen et al., 2021; Irani et al., 2010).

Seen through this lens, agency on technology and development is often continually dictated by actors other than the communities themselves. This is common among many HCI and ICT4D interventions where the technological intervention alienates or ignores the social and political conditions which dictate the longevity and sustainability of the intervention (Lazem et al., 2022; Heeks, 2002). Similar to how colonial powers have extracted materials from a colony to empower its colonial centres and homeland, rural areas continue to be seen only as sites for resource extraction rather than places for innovation (Hardy et al, 2018). Schumacher (1973), in his seminal work ‘Small is Beautiful’, described this logic as one that privileges the urban as the epicentre of progress, assuming the inevitable migration of talent, youth and resources from rural to urban. Thus, within this logic, cities ought to be populated while rural regions are viewed as backward or residual. Consequently, rural communities are often seen as ‘the other’, in need of development and modernisation rather than recognised as sites of alternative modernities (Hardy et al., 2018).

Researchers in HCI have long argued that human values should guide technological design. From the development of computer systems at work or at home (Sellen et al., 2009), to the creation of Artificial Intelligence (AI), ranging from Large Language Models to industry applications (Billones et al., 2025), issues of ethics and values have never been more central. Yet the

critical question remains: whose values are included? Computer systems do not exist in isolation but are deeply embedded within social, cultural and organisational ecologies (Crabtree et al., 2012; Kambunga et al., 2023). Understanding local worldviews, indigenous knowledge, and value systems is therefore essential to a technological system that aims to support the coordination and collaborative forms of work (Sultana et al., 2018; Hardy and Wyche, 2019).

Participatory Design as a means of Emancipation

Research into the digitalisation of rural activities has recognised issues of access, inclusion and plurality (Siew et al., 2013; Shoemaker et al., 2022; Muashekele et al., 2024). This stream of literature also acknowledges the need for methods to account for the significance of the technology users (or non-users) social context, material culture, diversity and embodied knowledge. The digitalisation of previously interpersonal practices and spaces has increased research into these issues and their implications for effective and equitable design. Drazin (2021) for instance, calls for designers to better interconnect the anthropological and the digital, and Pink et al. (2022) suggests ‘blended’ approaches across disciplines to enable this. The result has been ontologies and methodologies originating from ethnography and social science that integrates reflexivity, participation observation, embodied and collective action, communities of practice, applied in emerging contexts and advancing design approaches for digital technologies. At the forefront of this is participatory design (PD) that approaches knowledge and product creation as a collective or co-created process.

PD emphasises issues of inclusion, situated knowledge and plurality. It requires the inclusion and empowerment of all potential user groups in the design process, and for these activities to be ongoing and open-ended rather than one-off and closed. Workshops enable this opening-up and inclusivity of digital design processes. Tacchi (2020) for instance, used workshops to teach locals digital techniques to improve inclusion in digital platforms that recognises access and inclusion as intersecting cognitive, affective, political, economic, material and cultural dimensions. She found participants then

adapted the techniques according to their own local conditions and aims, showing the development of capabilities, inclusion and customisation that PD can achieve. Loh and colleagues (2022) have also demonstrated the suitability of design workshops in their work of understanding collective values for designing community network solutions with Sarawak’s Iban community.

Another method to address the tendency for design to maintain agency with the designers and certain users in workshops is to have them led by diverse participants. Harington et al. (2019) demonstrate this in their ethnographic PD workshops, where researchers are reflexive to participants’ circumstances, perceptions and experiences, including their views on research itself, and to adopt the workshop materials and activities to reflect this while being sensitive to any unintended harms.

Additionally, Dhaundiyal and Sharma (2022) outline that workshops with diverse groups creating diverse objects help people articulate their tacit understandings and barriers to using a technology, where the created objects can create shared knowledge, articulate the difficult-to-articulate, and stimulate deeper understandings and discussions. Interdisciplinary and cross-sector workshops further enhance diversity, particularly addressing intersectional issues like the Sustainable Development Goals (Fredericks et al., 2022). These approaches collectively mitigate conventional imbalances between researchers or designers with the populations, thereby contributing to ethically driven digital practices.

Critiques and Limitations of Participatory Design

While participatory and co-design approaches have promoted more inclusive and contextually rooted design practices, scholars have warned against viewing them as inherently equitable or effective. Vines et al. (2013) contend that participation is often shaped by the project’s institutional agendas, resulting in tokenistic involvement rather than true shared power. Muashakele et al. (2023b) also discussed the limitations of co-design as local participants, particularly from rural and indigenous communities, can be constrained in their solutions by their knowledge of existing technologies. Instead, scholars

have proposed the incorporation of *futuring,* a design technique based in futures thinking that foregrounds technology design through envisioning the future, which enables the design to move beyond the immediate considerations (Inayatullah, 2017; Farias et al., 2022; Muashakele et al., 2023b).

The impact on both community and technological outcomes of PD projects has also been raised. In a paper questioning the existing PD research, Bødker and Kyng (2018) highlighted the limitations of PD in focusing on localised projects that are overly focused on the process and not outcomes, while raising concerns about the overall low technological advancement goals within the field. Sustainability of PD projects also remains challenging, as community-led infrastructures and institutional support are rarely long-standing (Dearden & Rizvi, 2008). In cross-cultural settings, participatory norms based on Western democratic ideals, such as open critique or consensus-building, may clash with collectivist, hierarchical, or relational cultures (Winschiers-Theophilus & Bidwell, 2013).

Researchers in the field, however, have attempted to address these challenges through frameworks such as the cultural engagement framework (Winschiers-Theophilus et al., 2019), which attempts to elevate the PD relationships from merely cross-cultural or multi-cultural to a trans-cultural paradigm. This approach actively involves diversity of stakeholders and perspectives with the intention of co-designing solutions that are not limited to the constraints of ‘pleasantries’ in its solutions (explored in Chapter 6).

Section Summary

The literature in this section demonstrates a growing consensus around the need for more participatory, situated, and culturally grounded approaches as more appropriate ways of engaging marginalised communities. These insights highlight the value of working directly with communities in design that better ground their own lived experience into technologies that they use.

Yet, despite growing recognition of the misalignment of platforms with marginalised communities, there has been limited application of participatory

design in e-commerce and DM platforms. Much of the existing HCI research in e-commerce still adopts a user-centric approach, treating users and designers as distant rather than co-designers. Aside from that, studies of participatory design, a more interpretivist research approach, have in the past rarely been integrated with explanatory frameworks, such as critical realism, which could reveal broader cultural and structural mechanisms shaping design outcomes.

Overall, acknowledging these gaps and limitations is essential to reorienting technology design toward more reflexive and more redistributive practices, an orientation that this thesis extends in the specific methodological framework it adopts, detailed in Chapters 3 and 6. The review chapter now turns from design literature to examining global case studies of DM adoption to examine how platforms interact with diverse contexts.

2.4 GLOBAL CASE STUDIES

DM platforms have expanded rapidly across both developed and developing economies, reshaping relationships between producers and consumers while consolidating economies of scale and vast data infrastructures. Prominent global platforms include Amazon, Alibaba (Taobao) and eBay, while Lazada and Shopee dominate the Southeast Asian market. Recent studies have highlighted their potential not only for economic growth, but also for community empowerment and social innovation (Sijabat, 2016).

Global South

In China, where there is a national and political agenda in empowering the rural through digital enablement and commerce, considerable resources, alongside public-private partnership, have been invested to facilitate the adoption of an e-commerce marketplace in the rural areas (Li, 2022). Indeed, the platform that has been hailed by the UN as an exemplar of rural development through e-commerce as it has brought unprecedented success and alleviated poverty through the digital intervention of e-commerce. Platforms such as *Alibaba* and *Pinduoduo* have had a significant impact on rural developments through their proliferation in rural regions of China (M.

Li, 2022; Martindale, 2021; Yu & Cui, 2019). With extensive initiatives and investment, alongside a top-down poverty alleviation effort from the Chinese Communist Party (CCP), these platforms have seen significant growth in rural micro and small enterprise engagement (Haji, 2021).

Researchers in China have however cautioned the scaling up and specialising of enterprises in the rural, as formalist economic ideals would naturally encourage, given the new market opportunities brought about by DMs. Studies in China show that in rural villages, focusing on producing specific, specialised products has caused the homogenisation of entire communities, resulting in unintended social and cultural shifts (Wang et al., 2021). Additionally, this approach has fostered a highly competitive atmosphere among villagers (Li, 2017). Therefore, more research is needed on the adoption of digital platforms within rural settings and their effect on the rural economy.

In his study of e-commerce development in rural areas of BRICS countries, Haji (2021) argued that infrastructure, education, and policy are crucial to rural e-commerce development. He emphasised significant opportunities for South-South cooperation and knowledge exchange, particularly among countries in the Global South facing similar developmental challenges and infrastructural constraints. This also suggests that the outcomes of this study could have wider implications beyond the local level, to other comparable contexts.

Across the Global South, there has been a plethora of creative and diverse cultures of technological engagement that challenge Western assumptions of innovation (Henrich et al., 2010). Examples include China's hacking culture and the repair practices in Bangladesh and Namibia, which sustain informal yet vibrant digital economies (Ishtiaque Ahmed et al., 2015). Similarly, Arturo Escobar (2018), a Colombian-American anthropologist, introduced the notion of pluriversal design as an alternative to Western-centric modernity. He proposed a series of alternative ontologies, such as degrowth, communal logics, rights of nature, and other transition initiatives that contest the Western capitalist notions of progress (Escobar, 2018). Complementing

these principles, researchers in Colombia have proposed equity by design (Reynolds-Cuellar & Ming, 2020), advocating the embedding of social justice and participatory ethics directly into technological practice, reframing rural settings as design labs, essential for equitable design.

Across regions, research continues to show contextual sensitivity as critical to rural design. In India, Kumar and Shekhar (2020), in their review of technological use in rural tourism in India, call for a more people-friendly technology considering the level of infrastructure and digital literacy of rural communities. In Ghana, micro-entrepreneurs' use of mobile technology has revealed that the owners and managers of these enterprises have limited awareness or understanding of the platform technology they are using, despite them employing these applications in their daily business activities (Asiedu et al., 2019).

In Bangladesh, Sultana et al. (2018) found that the prevalent approach of using technology design to 'solve' challenges faced by rural women in a patriarchal society, was problematic to the rural context. Therefore, they proposed an alternative technological design that is appropriate in such societies (Sultana et al., 2018). In addition, Wyche et al. (2015) explored mobile phone design with repairers in rural Kenya through a postcolonial computing approach. By engaging the participants 'on their own terms' using a series of interviews and drawing exercises, they found that rural repairers have both the imagination and agency to develop technological solutions for both local and global context.

Global North

In Europe, empirical studies of rural enterprises conducted by Chamberlain (2013) and Crabtree (2014) in the United Kingdom similarly found that rural enterprises do not regard profit maximisation and income growth as ultimate goals. They are observed to value relationality, reputation, adaptability, and continuity over growth and scale (Crabtree & Chamberlain, 2014; Galloway et al., 2011). Nonetheless, most DMs designs remained modelled after e-commerce giants such as Amazon, which is considered the 'standard' for a successful e-commerce system (Nkwo & Orji, 2018). These localised and

alternative design ontologies challenge the conventional metrics of success associated with modern capitalist ventures, which are typically characterised by scalability and shareholder returns.

Similarly, Robinson et al. (2021) demonstrate how island communities in Ireland co-created radio systems tailored to their collective needs, illustrating the rural communities' eagerness to engage in discussions and influence the design of radio technology suited to their needs. Collectively, these cases reveal that *designing from the rural* involves recognising local epistemologies and forms of creativity, rather than imposing pre-determined solutions that are decided not with the local community. These examples provide evidence that rural communities, if asked, are more than capable of co-designing systems through their distinct social, cultural, and economic logics. The problem, then, is not a lack of digital participation per se, but a mismatch between the design of platforms and the ontologies of those they aim to serve.

Despite the growing attention on HCI research in rural settings, research on DMs for RMEs remains limited. Existing studies in the Global North, such as Chamberlain et al. (2012) in rural Wales, have used local markets as testbeds for co-designing digital interventions that support small enterprises. Further, as informed by the work of Crabtree et al. (2015) research on the creation of an online shop, was carried out in rural Wales that sells goods and services from local suppliers.

In addition, research on digital innovations of RME in the wider European context, including the work of Räisänen and Tuovinen (2020). The authors explored technological diffusion through workshops designed to support rural MEs in Finland in their effort to adopt digital technologies as part of their daily business operations. These studies reveal recurring challenges of infrastructure, digital literacy, and population density (Hardy et al., 2019). Nonetheless, rurality in the Global North differs significantly from that of the Global South in cultural, institutional and economic dimensions. This calls for more grounded approaches that are sensitised to the local setting in studying DM platforms in the Global South.

Section Summary

Across these global cases, it becomes clear that DM platforms are socio-technical systems whose outcomes depend on their interaction with local histories, cultures, practices and institutional arrangements. While significant insights have been gained from cases in China, India, Latin America, and Europe, the variety of digital economies throughout rural Southeast Asia remains underexplored in both rural entrepreneurship and design scholarship.

In this region, rapid digital expansion coexists with structural inequality, uneven access, and rich traditions of communal practices (Ngah et al., 2022; Tabassum et al., 2023). These conditions require a more situated analysis of how digitalisation unfolds on the ground (Papacharalampous, 2021; Jack et al., 2017). Against this backdrop, Malaysia presents an opportunity to examine how global platform logics intersect with local realities of rural micro-entrepreneurship and postcolonial development, a focus taken up in the next section. The limited scholarship emphasises the need for empirical engagement with RMEs in Sarawak that takes into account the distinct institutional, cultural, and social contexts in digital commerce. The review now turns to prior research in Sarawak, where digitalisation agendas intersect with uniquely postcolonial, indigenous and geographically dispersed settings.

2.5 DIGITALISATION IN RURAL SARAWAK

As mentioned in Chapter 1 (and in greater detail in Chapter 4), Sarawak has placed digitalisation high on its policy agenda. The extensive investment in platforms and the near-universal mobile ownership in Malaysia however, as in many global cases, do not equate to accessibility. Past research in Sarawak found that internet connectivity remains the main hindrance to rural communities' access to the internet, despite smartphone ownership (Horn et al., 2018). The infrastructural challenges in Sarawak, particularly in rural and remote areas, remain severely unequal, despite the state’s RM190 billion Gross Domestic Product (GDP) (2022). The infrastructural inequality, along with its social and economic implications for rural communities, can be traced

to Sarawak's colonial legacy and political oversight (Raj, 2013; Brown, 2021).

Digital Marketplace platforms in Sarawak

Although postcolonial computing emphasises its relevance to nations without a colonial past (Irani et al., 2010), Sarawak's colonial history (detailed further in Chapter 4.1.1) and prevailing rural marginalisation (Tedong et al., 2022; Raj, 2013) offers a significant context for examining the effects and engagement with DMs, a technology heralded as a tool for economic and social empowerment. The use and adoption of e-commerce platforms in rural areas remains uneven and underexplored (Cheuk et al., 2018), underscoring the need to explore how entrenched structural barriers, local cultural values, and situated interactions shape engagement with DMs. This builds on the call by Heeks and Wall (2018) for ICT4D research to engage with issues of power, rights and justice, advocating for more considerations of structural causalities in arriving at more explanatory understandings of interventionist work in developing countries.

For instance, the Lun Bawang community (Chew, 2014) in northern Sarawak despite being geographically isolated and without state-based amenities, has recently gained digital connectivity through new telecommunications infrastructure (Jolene, 2022). The expansion of reliable internet access in theory has opened new opportunities for the RMEs there, increasing their potential to participate in digital economies. Local and federal policies simultaneously aim to 'digitalise' rural areas and promote rural goods and services by digitalising commerce, including the introduction of DMs. There remains little research on how emergent users (Devanuj and Joshi, 2013) such as rural and remote communities like the Lun Bawang people, who are traditionally agriculturalists, engage with DM platforms in the context of changing access and socio-economic conditions (Shah et al., 2017).

Digital Challenges for Rural Entrepreneurs in Sarawak

Researchers have also examined the challenges of digitalisation among rural communities in Malaysia. Abdul Ghaffar (2022) conducted research in rural Malaysia on the smart villages enablement programme, and identified six challenges that exclude rural communities: limited digital connectivity, expensive infrastructure, low digital literacy, demographic and geographic barriers, socio-economic issues, and the shortage of relevant content and applications (Figure 2.3). These structural challenges also translate across to RMEs. This study, however, though it considers broader structural challenges, has not sufficiently accounted for the agentic voices of rural communities, or their unique social-demographic context and the broader cultural mechanisms that might be at play in impacting rural digital inclusion.

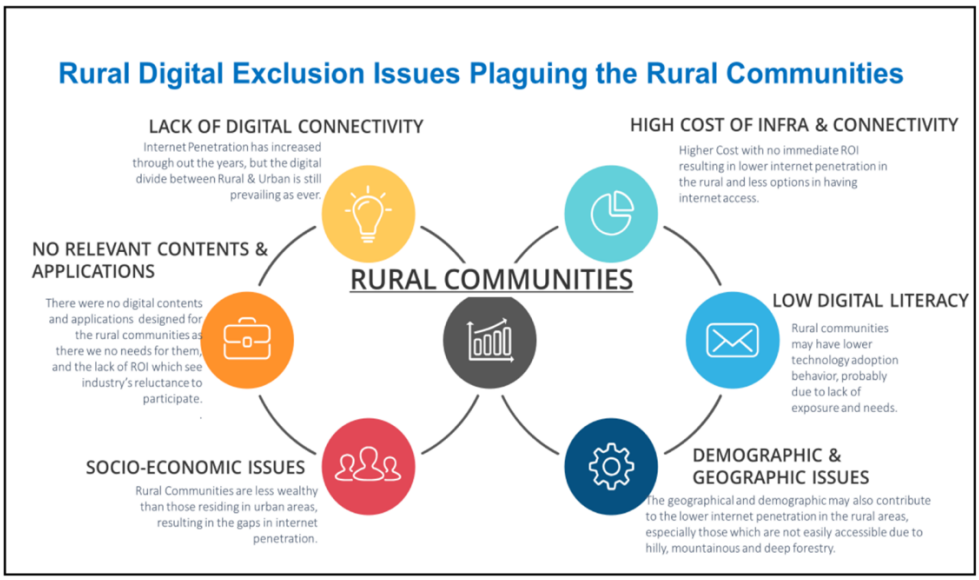


Figure 2.3 – Challenges of Rural Digital Exclusion in Malaysia (Abdul Ghaffar, 2022).

A large majority of agricultural entrepreneurs in Malaysia are sustenance-based and are limited by land availability and agricultural knowledge (Hamid et al., 2019). In rural Sarawak, rural agricultural entrepreneurs are predominantly female and in their 40s and beyond (Morni et al., 2020). According to the authors, who conducted a 420-questionnaire survey in Betong District, Sarawak, small agricultural entrepreneurs are willing to invest to improve their economic performance despite the median income being close to the Malaysian poverty level. Their willingness, however, was observed to be influenced by gender, prior work experience, participation in

the workforce as an entrepreneur, educational background, and business operations (Morni et al., 2020).

From a socio-economic perspective, the sustainability of income generation in rural areas directly impacts the migration of younger, primarily male inhabitants, who are more likely to seek off-farm employment (Chen et al, 2019), draining rural regions of their youth and workforce. Further, Hamid and Yahaya (2019) in their study of rural farmers in Bintulu, Sarawak, found that a majority of the agricultural activities were carried out by older females, as both males and young people were observed to have greater access to off-farm employment (Chen et al., 2019).

Moreover, local farmers have not considered seeking 'expert advice' in accessing information or subsidies, although they were confident in accessing information by visiting successful agricultural farmers or searching the internet to obtain agricultural knowledge. However, significant portions of older respondents had digital literacy challenges in doing so. Seeing that local entrepreneurs are more comfortable accessing peer knowledge or utilising the internet rather than approaching 'experts', implications can be drawn for the need for approachability and equality in the design of DMs.

Subsequently, digital technology research in Sarawak has mainly focused on ICT4D deployment (Winschiers-Theophilus et al., 2019; Tabassum et al, 2019), indigenous knowledge management (Siew et al., 2013; Zaman & Winschiers-Theophilus, 2015), arts and crafts (Reitsma et al., 2019), community networks (Loh et al, 2022), capacity building initiatives (Abdul Ghaffar, 2022; MCMC, 2022; Shahriar et al., 2014), and e-government adoption (Kamarudin et al., 2021). An illustrative case of this research include the Penan Oroo sign language, whereby their distinct Oroo sign language used in remote jungles has been overtaken by technology-driven forms of communication, now reviewed through pluriversal digital design approaches (Zaman et al, 2013).

There remains limited research on DMs and the needs of RMEs in digital commerce in Sarawak. This literature stresses the importance of researching appropriate and culturally relevant applications in order to prevent further

exclusion (Abdul Ghaffar, 2022). However, there is a lack of research on what such applications should encompass to be user-friendly and appropriate to rural communities, in particular, to RMEs in the context of developing settings.

Section Summary

In summary, existing research in Sarawak highlights ongoing tensions between policy-level ambitions for digitalisation and the lived realities of rural communities, which are shaped by postcolonial legacies, infrastructural inequalities, and socio-cultural practices. Despite strong national and state policies and increasing connectivity, no studies to date have specifically examined how RMEs in Sarawak engage with DM platforms, or considered their perspective in DM technology design. Existing research highlights the need to understand how technology, culture, and local practices influence digital adoption, but little is known about how DM platform assumptions and interaction models are encountered by rural Sarawakians, many of whom are emergent digital users or first-time users themselves. Furthermore, there is insufficient studies that considers how the structural, cultural and agentic mechanisms shape RMEs' engagement in Sarawak, as past studies often focus on one of the three rather than attempting to analyse them collectively.

This study, therefore, addresses these gaps by examining the in-situ marketplace participation of RMEs in Sarawak and their engagement or disengagement with DMs, aiming to uncover how DMs are engaged with, adapted to, or rejected in rural Sarawak.

2.6 CHAPTER SUMMARY

In establishing the conceptual foundations for this study, this chapter situates its literature search across rural entrepreneurship, DM platforms, design studies in HCI, global case studies of DM research, and the digitalisation literature in Sarawak. This literature demonstrates that DM for RMEs

intersects with platform design, place-based realities, social relations, and histories of development. Across these domains, several key insights emerge:

- Rural micro-entrepreneurship is shaped by embeddedness, relational, and subsistence logics that challenge formalist, growth-oriented entrepreneurial assumptions.
- Digital marketplaces encode specific economic and behavioural ideologies, including individualism, entrepreneurial alertness, efficiency, and algorithmic oversight, that often conflict with rural, informal and substantive practices.
- HCI, ICT4D and postcolonial computing scholarship highlights the limits of techno-centric, universal design approaches, pointing towards more situated, participatory and culturally grounded design practice that recognise local values, ontologies and agency.
- Global case studies consistently show that platform adoption is context-dependent, with platforms interacting, reshaping and being shaped by local culture, infrastructure and institutional contexts.
- Sarawak's digitalisation agenda unfolds within a landscape of infrastructural inequality, postcolonial history and indigenous cultural practices, with a diverse rural demographics amidst a backdrop of infrastructural and socio-economical changes.

Through this literature review, several gaps have also been identified, providing the opportunity for further research within these areas:

- Limited empirical studies that document the everyday practices and lived experiences of RMEs, particularly in Southeast Asia, on encountering conventional DM platforms in situ.
- Few work that examines how DM platform assumptions and interaction models are interpreted, adapted, resisted or re-appropriated in rural settings, amidst the proliferation of DMs in the region.
- A gap in HCI literature that examines RMEs as co-designers of marketplace technologies, despite strong theoretical arguments for participatory and pluriversal approaches.

- There is little integrated explanatory account of how structural, cultural and agentic mechanisms together shape RME engagement, as existing studies typically focuses on one dimension.

In summary, the review demonstrates a mismatch between DM platform assumptions with rural entrepreneurial logics, especially in non-WEIRD and rural contexts. While HCI scholarship has emphasise the need for technology systems to be more situated and participatory, there has been limited studies in the domain of DM design. Existing studies of rural digitalisation also often lack explanatory understanding of how structural conditions, cultural understandings and entrepreneurial agency interact in influencing the technology use among RMEs. In order to address these gaps, a more grounded and qualitative inquiry that privileges community voices and in situ practices is required. This leads us to the following chapter that outlines the methodological rationales and methods adopted in this study, chosen to address the specific research questions outline in the previous chapter.

3

METHODOLOGY

This chapter outlines the methodological foundation and practical strategies that underpin the studies. In addressing the questions of what rural micro-entrepreneurship looks like in Sarawak, how it could be co-designed with rural micro-entrepreneurs (RMEs), and why RMEs disengage from existing digital marketplace (DM) platforms, the research philosophy of critical realism was adopted. Its key tenets of methodological pluralism guided the use of ethnography, participatory design (PD), elite interviews, and document analysis as the study's methods. This mixed approach enables a stratified analysis of observed behaviours through empirical findings, while also seeking to uncover deeper structures and mechanisms using a sociological method called *the morphogenetic approach*, or the *morphogenetic/ morphostatic* (M/M) approach in understanding rural entrepreneurial engagement with DM platforms.

The methodology chapter focuses on outlining the philosophical framework of critical realism and its implications for qualitative inquiry. It then outlines the methodological design of the study. This includes the rationale for using ethnographic, participatory design, desk-based, and elite interview methods; the approach to fieldwork and participant engagement; and the analytical strategies employed in data analysis. The chapter concludes by reflecting on ethical considerations of the research process.[1]

[1] Given the importance of the research site to the study, details of Sarawak as the research context, as well as the socio-economic and geographical information of each research site, along with the researchers' reflexivity, typically placed in the methodology chapter, is dedicated to a separate chapter in Chapter Four 'Setting the Scene'.

3.1 RESEARCH PHILOSOPHY: CRITICAL REALISM

This study adopts a critical realist philosophical position, which arose from the challenge of reconciling the two dominant research philosophies in social science research: positivism and interpretivism. Positivist approaches assume a social world that can be measured through objective methods, risking the flattening and reduction of meaning-making into measurable variables and predictive patterns, and often overlooking the inherent subjectivities of context and social influences (Kanellis and Papadopoulos, 2009). The interpretivist approach, on the other hand, views the social world as *socially constructed* and emphasises generating rich descriptions of meaning and lived experiences. This approach, however, typically prioritises depth of meaning over the broader structures that shape these experiences, while typically leaving causal explanation to other approaches (Bevir and Rhodes, 2005).

Critical realism is said to be the 'middle ground' that seeks to address this longstanding concern of reconciling the realist position of an objective world with the socially mediated nature of knowledge (Heeks and Walls, 2018). Developed originally by Roy Bhaskar (1975) and later advanced by scholars such as Archer (1995), Sayer (2000), and Danermark et al. (2002), critical realism gives due respect to both the complexity and nuance of social life, while maintaining the need for explanatory depth on what shapes and influences them.

Stratified Ontology, Epistemic Relativism and Methodological Pluralism

Building on prior realist philosophies, Bhaskar (1975) proposed a *stratified ontology* in viewing social reality, where reality is layered within nested domains, distinguished between the *empirical*, the *actual*, and the *real*. The *empirical* consists of what is observed and experienced; nested within the *actual*, which consists of events that are occurring regardless of whether we observe them or not; which is further nested within the *real*, consisting of real causal mechanisms that generate events (Rickly and Canavan, 2024). Through a *stratified ontology*, purely empirical causation is rejected as it only considers the 'empirical' domains, while overlooking the generative

structures that shape these experiences and events in the 'real' domain (Figure 3.1)

This tripartite model enables researchers to acknowledge the reality of structures and mechanisms while recognising that our knowledge of them is always partial and situated, a position summarised as *epistemic relativism*. While positing that objective 'truth' exists, independent of our observation or existing knowledge, critical realism recognises that our ability to observe them manifested is limited by our measurements and tools. This departs from the objectivism and neutrality claimed within positivism. Without the ability to have '*direct epistemic access'* to a manifest truth, claims of knowledge are hence partial and fallible (Cruickshank, 2003, p.98).

	Domain of Real	*Domain of Actual*	*Domain of Empirical*
Mechanisms	*X*		
Events	*X*	*X*	
Experiences	*X*	*X*	*X*

Figure 3.1- The three ontological domains (Bhaskar, 1975, p.56).

Given that reality is seen as *stratified* and how it can be known is subject to *epistemic relativism,* critical realism sees the need for *methodological pluralism* to access and study as many different aspects of a phenomenon as are needed to provide an explanation of mechanism(s). It sees the importance of both quantitative and qualitative approaches in that both may reveal important aspects of a phenomenon, while their single usage can limit the ability of a researcher to either obtain sufficient explanatory power or be situated enough to contextualise nuances of the social world.

This ontological commitment is further refined through Margaret Archer's (1995) morphogenetic approach, which proposes a methodology to study the interplay between structure, agency, and culture (SAC) to understand social change. The role and importance of structure and agency in influencing social change have long been debated by researchers, with theories aplenty

advocating for either end, while some proposing to unify them. Archer's framework critiques prior attempts (further explored in Chapter 7.2) and proposes the morphogenetic framework through a critical realist worldview in analysing SAC distinctively and temporally, while also studying their interlinkages (Archer, 1995, 2007). The morphogenetic approach frames social transformation through a temporal sequence (Figure 3.2) of structural conditioning (T_1), social interaction (T_2-T_3), and structural elaboration (T_4) to explain social transformation or reproduction (Archer, 1995).

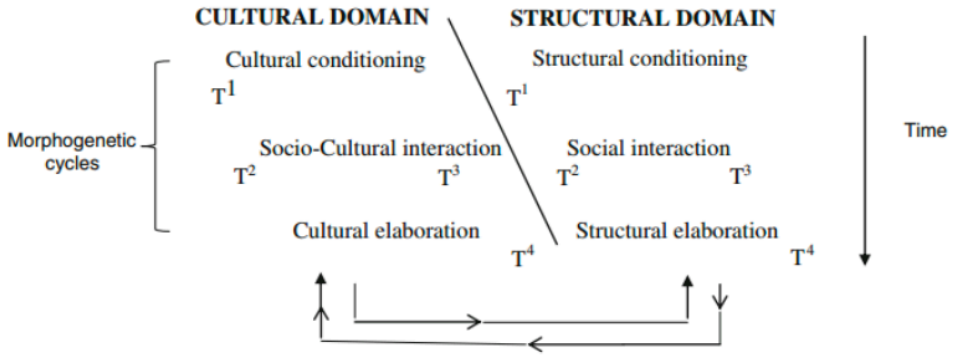


Figure 3.2 - Archers' morphogenetic cycle (Archer, 1995, p.323)

The critical realist perspective is selected to understand rural micro-entrepreneurship and its interactions with DM platforms in Sarawak, as it adequately considers the descriptive understanding of digital engagement by rural actors within their local environment, while also focuses on the social, infrastructural, and institutional forces that influence or limit rural entrepreneurial practices. The following empirical chapters documents how RMEs engage with (Chapter 5) and reimagine DMs (Chapter 6), but it is through the critical realist lens that an explanation can be generated on why certain practices persist, why platform interventions falter, and why some structural barriers remain resilient over time (Chapter 7).

Critical realism also provides an ontological bridge between formalist and substantivist debates in economic anthropology. While the formalist view assumes universal rationalities and maximising behaviours of actors (Hodgson, 1999), and the substantivist view emphasises the cultural embeddedness of economies (Polanyi, 1957; Dalton, 1979), critical realism

holds spaces for both. It allows us to see how entrepreneurial practices are both situated in local contexts, yet structurally shaped in Sarawak. This is particularly useful in this context, where micro-entrepreneurship is shaped not only by tradition and social obligation, but also by digital infrastructures, government policies, and global platform logics. In studying the domain of DM platforms within rural settings, critical realism provides an alternative path of recognising social reality as contingent and open, while being interested in identifying how the observations identify underlying generative mechanisms that best explain them. This approach moves beyond 'naïve' positivist correlations and beyond purely interpretive accounts (Bhaskar, 2009; Rickly and Canavan, 2024). In ICT4D, Heeks (2018) advocated for a more critical realist approach in enabling researchers to move beyond descriptions of *design–reality gaps* to explain causal forces within the broader context that generate them, a concern that this chapter focuses on.

Applied here, this approach allows us to differentiate between, RMEs' accounts of interest or disinterest in DM platform as empirical experiences; platform proliferation and digital training programmes as events; and platform design inclinations and policy frameworks as mechanisms. Given the research objectives of this study, understanding RMEs' engagement and disengagement with DM platforms requires attention to all three domains. While empirical analyses alone capture important actor perceptions and practices, a critical realist lens also allows us to identify the structural and cultural logics that prefigure those experiences (Porpora, 2015).

However, critical realism is not without its limitations. Heeks and Walls (2018) recognise the challenge of operationalising it due to the amount of data it typically requires. This data is more reasonably achievable with time flexibility through a doctorate, for example, but more challenging for wider researchers with shorter funding cycles and time commitments. The literature on adapting the morphogenetic approach in studying digital technology is also still in its infancy, although not without prior examples (Mutch, 2010).

In sum, critical realism offers an integrated theoretical and philosophical foundation that supports the research objectives and the research methods

employed in this thesis. It advocates for the use of immersive methods to access empirical experiences, while simultaneously encouraging researchers to probe the underlying generative mechanisms that produce the observed. Having clarified the ontology and epistemology of this study, the research methodology and methods chosen are now considered.

3.2 RESEARCH METHODOLOGY

Guided by a critical realist orientation of methodological pluralism, multiple methodologies were adopted and conducted in sequential phases to engage with the different strata of rural reality. Ethnography was a key method used, which emphasises immersion in the field to understand the social organisation of local actors, gaining an insider perspective on participants situated actions and practical reasoning, which corresponds to the *empirical* domain within critical realism. This was complemented with research methods such as participant observation, walkthrough studies, field note taking, document analysis, and elite interviews.

Aside from ethnography, participatory design was adopted as a secondary methodology. It provides the co-designing of technology with users, aiding in the elicitation of scenarios and imaginaries not always observable in situ via ethnography. This compliments the understanding of the *real* domain within critical realism, which are events that exists regardless of empirical observation. Workshops were conducted with participants and methods such as futuring, personas and scenario-building were integrated to elicit the aspirations, constraints and future desires, enabling the surfacing of platform concerns and designs tied to deeper social and cultural practices relevant to the users.

Finally, Archer's morphogenetic approach was operationalised, not as a data collection methodology as the previous two, but as an analytical framework to analyse how agency, culture, and structure dynamically shape rural digital entrepreneurship and platform engagement over time. The use of the M/M framework of $T_1 – T_4$ offers a temporal, explanatory lens in seeking generative

mechanisms, which corresponds to the *actua*l domain within critical realism, through the abductive analysis of the empirical findings from the collective methodologies. Collectively, these methodologies and their corresponding methods offered distinct but complementary insights into the stratified reality of our inquiry, summarised in Figure 3.5

3.2.1 Ethnography

Methodology

Ethnography emphasises immersion in the field to collect data directly from sites of practice. This method was primarily employed to address RQ1, which seeks to understand how RMEs organise their work and how they engage with DM in their lived contexts.

Ethnography as a research methodology has a long lineage that traces back to Bronisław Malinowski, whose early 20th-century fieldwork emphasised immersive and long-term engagement with the studied communities in Melanesia (Malinowski, 1922). Due to the outbreak of World War I, Malinowski was stranded on the Trobriand Islands and spent approximately two years studying the communities of the Trobriand Islands. Malinowski's legacy laid the groundwork for ethnography as a rigorous, immersive, and culturally embedded method.

Following Malinowski, the Chicago School of Sociology in the mid-20th century adapted ethnography to the study of society and culture (Park and Burgess, 1925). Researchers there pioneered the ethnographic exploration of social life within local societies, conducting ethnographic fieldwork in contexts like urban neighbourhoods, ghettos, and workplaces (Wirth, 1928; Anderson, 1923; Thrasher, 1926/ 2013). Their tradition advocates for 'getting the seat of your pants dirty' (Lee, 2017), as an advocation to pay attention to the empirical world by engaging directly with it, albeit sometimes uncomfortably. Roy (1959), for instance, utilised ethnography to study the factory workers, highlighting how they used informal social interactions, such as the well-known "banana time" to navigate repetitive work routines.

From these traditions, ethnography became increasingly adopted in the study of design and technology. The Lancaster School played a pivotal role in formalising ethnomethodological principles for the use of ethnographic methods in design research, emphasising the understanding of everyday practices and social organisation as they naturally occur (Crabtree et al., 2012). Lucy Suchman's '*Plans and Situated Actions'* (Suchman,1987) was also seminal in the use of ethnography in design research. Her method equally advocates for entering into actual sites where particular systems are being designed for and used, observing everyday practices as they unfold. These practices became foundational in the development of ethnography for technology design.

In the positionality of the researcher when conducting ethnography, there are two main approaches as distinguished by Gold (1958): the 'complete observer' and the 'going native'. The former involves observing with minimal participation and interaction, while the latter involves fully integrating into the native's activities and identity, but it risks losing analytical objectivity. This study adopted an intermediate position, alternating between participation and observation, shadowing members at certain points while observing in others (Lazar et al, 2017). Fieldwork, therefore, moved fluidly between observation and engagement, beginning as an observer to gain contextual understanding and gradually becoming a participant as rapport is built and access is welcomed (Gold, 1958).

In the context of this thesis, this rich ethnographic tradition provides a methodological foundation, rooted in a well-established tradition of studying social practices in context, for exploring rural micro-entrepreneurship in Sarawak. This enables the research to better understand and design for the unique realities of RMEs interacting with DMs in Sarawak.

Fieldwork

Fieldwork spanned approximately nine months, starting from a half-month scoping trip in March 2022, followed by a seven-and-a-half-month fieldwork (July 2023 - February 2024), and a final return to the site for one-month (July

2024 - August 2024). As a means of accessing the participants and preparing for the ethnographic work, the first three months of the second fieldwork were spent on a visiting fellowship at the University of Technology Sarawak (UTS), which had a strong history in rural technology research. The researcher conducted preliminary desk studies and stakeholder interviews on a research project of mapping the digital entrepreneurship scene in Sarawak. These early on-site engagements provided an overview of local policy and initiatives, as well as access to local stakeholders who informed later community-based fieldwork.

The main ethnographic study of RMEs across several of Sarawak's 40 ethnic groups started on the fourth month. Participants included the larger *Iban* and *Bidayuh* communities, as well as the more remote *Lun Bawang* tribe. These communities represented three categories of rurality, including accessible rural towns, remote villages and very remote villages. The diversity in both ethnicity and rurality provided the study with a wider range of socio-cultural and socio-technical perspective of rural entrepreneurship in Sarawak. Specific information about the five research sites is detailed in Chapter 4.3.

Participants and Recruitment

The ethnographic study involved 24 RMEs, purposively snowball-sampled across five field sites. Participants were selected based on three criteria from the literature in Chapter 2.1: (1) they operate a form of microenterprise within a rural setting, (2) they employ fewer than five employees, and (3) their enterprise's annual turnover is less than RM300,000 (Asiedu et al., 2019; Duncombe & Heeks, 2002; SMECorp Malaysia, 2022). Criteria of engagement with digital tools were not prioritised to allow account from both digitally and non-digitally active RMEs.

A RME was defined as a self-employed individual or small enterprise, operating informally or semi-formally in trading products and services (e.g. food, crafts, homestay accommodation and taxiing). They are typically not registered under the purview of the government, nor does it typically result in the reporting of earnings or taxable income (Bong et al., 2025). Study sites

included RME's homes, farms, shops, the physical marketplace and other spaces that constitute workspaces. The language of engagement was mainly in Malay, or Bahasa Malaysia, the lingua franca in Malaysia. Local ethnic languages were also encouraged, and local informants supported translation. This multilingual engagement was crucial for inclusivity and in facilitating authenticity in interaction.

Methods of Data Collection

In line with traditional ethnographic research methods (Atkinson, 2007), a list of qualitative techniques was used to support the ethnographic inquiry:

1. Participant Observation: This involved participating in informants' daily routines, shadowing participants in workplaces such as markets and farms, and attending community events.
2. Semi-structured Interviews and Informal Conversations: Involving both casual conversations and semi-structured questions, these supported the researcher's understanding of local practices. Some of the audio was recorded and transcribed, while others were noted down in field notes.
3. Fieldnotes: Reflexive journaling was kept during the period of fieldwork, while each RME observation was written up through thick description.
4. Visual and Digital Data: This included photographs, videos and participant-produced materials such as sketches, hand-written notes and WhatsApp posts.
5. Walkthrough: This involved systematic walkthroughs of DM interfaces with participants to understand their workflow, user experience, barriers of use and perceptions towards the specific DM.

These methods allowed for layered insights and the triangulation of perspectives. Crucially, they also allowed the honouring of participants' own epistemologies, attuning to how knowledge is produced, shared, and withheld in everyday life.

Observation Framework

The ethnographic fieldwork was guided by a sensitising observation framework that focused each ethnographic case around three recurring areas of inquiry that corresponds to the research questions: the everyday routines and situated practices of rural micro-entrepreneurship, RMEs' engagements with digital technologies and platforms, and situations where technologies appeared to breakdown, misaligned with local practices, or required improvisation or workarounds. These observations were further sensitised through the semi-structured interview questions (listed in Appendix A.2) conducted with each RMEs' that further informed the three areas of observation during fieldwork engagement. While observations remained flexible and responsive to emergent situations in the field, this structure ensured that comparable aspects of entrepreneurial activity were consistently documented across sites (see Appendix B.1). The forms of data collected in the initial placement included audio, video, documents, and interview notes. A process for collecting, sorting, and managing different types of data securely, especially during fieldwork, has been outlined in the Appendix B, while the data analytical strategies are detailed in 3.5.

Translation and Reflexive Positioning

A significant proportion of the ethnographic fieldwork, particularly semi-structured interviews and informal conversations was conducted in Malay, alongside occasional use of local indigenous languages. Translation hence was a key component of data generation and analysis. Audio and video recordings were selectively transcribed verbatim in their original language and translated into English during the analytic process.

Being fluent in both Malay and English, the researcher was positioned as a linguistic insider in most instances, enabling the primary transcription and translation to be conducted directly. However, the translation process required ongoing reflexivity regarding how meanings were interpreted and represented in English, reflecting an interpretive process shaped by the researcher's positionality, cultural familiarity and analytical lens.

In instances where participants drew on indigenous languages or culturally specific expressions, the researcher engaged local informants to clarify nuances. Where uncertainties remain, translations were discussed with participants or revisited through follow-up conversations. Despite these efforts, some meanings remained difficult to fully convey in English, and this is acknowledged as an inherent condition of cross-linguistic research. Certain terms, metaphors, or idiomatic expressions did not have direct English equivalents, and were therefore retained in their original form alongside contextual explanations (see Chapter 5.1 and 5.2). This approach sought to preserve the integrity of situated meanings from the field while maintaining analytic clarity.

In summary, ethnography provided the study with situated empirical data that illustrate the locally coordinated practices and meaning-making in which more positivist approaches such as surveys and questionnaire methods are unable to surface. The qualitative insights generated from ethnography provide critical understanding of particularly the 'empirical' domain of the critical realist' stratified ontology, which will be further analysed along with the 'actual' and 'real' through other methods.

3.2.2 Participatory Design

Methodology

Following the ethnographic fieldwork, this study employed participatory design (PD) as a methodology in addressing RQ2. PD is a design approach, originating from Scandinavian workplace democracy movements in the 1960s (Kensing et al., 2004) that emphasises inclusion and participation by actively involving users, particularly of marginalised groups in technology design (Kensing et al., 2004; Reitsma et al., 2019).

As a discipline, it has a long history of confronting power, 'inherent in formalised models of human activities rooted in rationalist tradition of Western philosophy' (Bannon and Ehn, 2013), with strong emancipatory ideals seeking to empower participants through 'mutual learning and 'bottom-up development' (Saad-Sulonen et al., 2018; Smith et al., 2021).

In indigenous HCI and community-based design, scholars like Winschiers-Theophilus et al. (2021) and Smith et al. (2021) have argued for approaches that go beyond localising pre-existing solutions, advocating instead the co-creation of technologies from within local epistemologies. In that sense, PD aims to reposition local users from passive technology recipients to co-creators in influencing technology that shapes their futures (Ssozi-Mugarura et al., 2015).

The methodological design is premised on participatory principles that foreground attentiveness to plurality in community technology design. PD hence is used here as both a theoretical and political stance to foreground ontological diversity. This stance drew from Escobar (2018)'s concept of pluriversality, which recognises that different communities have diverse ways of knowing, valuing and organising life, necessitating technology designers to reconsider the dominant universality in design. Through PD, the study explored how and what design could do if done through local worldviews and with local actors.

This orientation also draws on critiques of postcolonial computing and platform economy (Irani, 2015; Stark and Pais, 2020), recognising that platforms embody specific logics and scripts (Akrich, 1992) that rarely align with rural or indigenous values, which are "complex, plural and contested" (Robinson et al., 2021, p.20:4). Research in community-led rural development theory (Murray and Dunn, 1995) also highlights the importance of participation from local actors as a precondition for establishing sustainable local economic development, along with institutional structures to be responsive and flexible to bottom-up initiatives.

Inspired by traditions of critical design and participatory action research (Simonsen and Robertson, 2013; Björgvinsson et al., 2012), the approach was neither extractive nor solutionist, but positioned participants not only as informants but also as collaborators in imagining more just and appropriate digital futures. Hence, the adoption of PD in this study aims to centred lived experiences, cultural embeddedness and local meaning-making in positioning RMEs as co-designers and ontological agents of their digital futures (Muashakele et al., 2023a).

The Cultural Engagement Approaches

As discussed in the previous chapter, PD has evolved alongside the three waves of HCI over the past decades. Winschiers-Theophilus et al. (2019) categorised the HCI waves alongside the design paradigm continuum to illustrate how researcher and community engagement can be separated into categories of *cross-, inter-, multi-* and *trans*-cultural engagement (Figure 3.3). Also called *the cultural engagement approaches* or *continuum*, the framework was initially used to describe the parallels of HCI waves and the design paradigms of *user-centred design*, to *participatory design*, *interaction design* and *community-based co-design*, of which the authors advocated for the latter.

Table 1 Cultural engagement approaches

Metaphor				
Related disciplines	Cross cultural	Inter cultural	Multi cultural	Trans cultural
HCI	Wave 1: cognitive science, humans as subjects	Wave 2: collaboration and interactions	Wave 3: embodied experience and new meaning making	
Design paradigms	User-centred design: user and cultural models	Participatory design: engagement, empowerment	Interaction design: user experiences, reciprocity	Community- based Co-design: unity of epistemologies, relevance
Community narratives	Narratives by the other	Counter- narrative	Harmonious narrative	Reflected narrative

Figure 3.3 – The cultural engagement approaches in HCI (Winschiers-Theophilus et al., 2019, p.421).

Cross cultural engagement parallels *user-centered design* (Norman, 1983). Compared to a group of distinct but different fruits, this approach intentionally highlights the cultural differences between developers and users, treating humans as study subjects only (Winschiers-Theophilus et al., 2019). Next is *inter cultural* engagement, where it is compared to processing of different fruits resulting in a new representation. This parallels *participatory design* that seeks to amplify marginalised voices in their own ways, who may have been previously under- or mis-represented by previous *cross-cultural* researchers. This approach however, were criticised to be 'overly concerned' with power and 'doing good' (Rogers and Marsden, 2013). In *multi cultural* engagement, it is a 'fruit salad' of 'tasteful flavours' yet still recognizable (Winschiers-Theophilus et al., 2019, p. 422), where harmony and mutuality

is centred, emphasising acceptance of epistemologies, though often at the expense of objectivity. Finally *trans cultural* engagement is liken to a smoothie, where fruits combined to become a 'tasteful whole' without being individually identifiable. Parallel to *community-based co-design*, it emphasises localised and community-based epistemologies, 'looking beyond' specific cultures in technology design (Smith et al., 2021, p.2). This is done through 'heightened awareness' of diverse cultures to create new interpretations that transcend any individual culture for designing technology (Winschiers-Theophilus et al., 2019; Rodil and Winschiers-Theophilus, 2018).

> *"Viewed from a transcultural perspective, all existing cultures get a broader meaning, as any of their elements is no longer imposed as a tradition but is chosen freely, like an artist chooses colours in order to combine them in a new way in a painting. Transcultural creativity uses the palette of all available as well as possible cultures."* (Epstein, 2009, p.343)

Culture in this approach is not viewed as stationary, nor treated as courtesy gestures of 'politeness' to be stubbornly embedded out of empowerment motivations. Without being overly focused on incorporating 'the local's' epistemologies in design, the transcultural approach, proposed by indigenous and ICT4D researchers from Namibia and Malaysia, positioned culture as a negotiated design resource that transcends 'the borders of traditional culture' in which they are interpreted (Winschiers-Theophilus et al., 2019; Zaman et al., 2015). The framework, however, was primarily applied in indigenous knowledge management systems, ICT4D and rural energy projects with indigenous communities, while remaining underexplored in domains such as e-commerce and DM design that intertwined market economies, entrepreneurship and consumer behaviour.

Futuring as a Design Approach

Alongside conventional PD methods, this study also adopted a speculative design stance that draws on Muashakele et al.'s (2023a) 'futuring' approach. Rural participants often may struggle to view technological solutions beyond their immediate and most proximate constraints, which in this study may be

overly tied to infrastructural limitations and connectivity challenges. To elicit participants' co-design solutions, futuring has been proposed as a speculative method that draws on participants' aspirations and interpretations of their future to inform the design of technologies (Farias et al., 2022).

Originally used in a remote Nambian community by Muashakele et al. (2023a), whose work was rooted in futures thinking traditions (Inayatullah, 2017; Bell, 2013), their work serves as a guiding framework in designing the future workshop with rural and remote communities. This design technique was integrated with the cultural engagement continuum (further detailed in Chapter 6.2).

Research Design - Participatory Design Workshops

The prior ethnographic engagement in the various rural sites provided the opportunity for four iterative PD workshops with RMEs. The ethnographic insights, community access, and community rapport were essential (Davies et al., 2013; Siew et al., 2013) for further PD engagement. Each workshop was structured around co-design activities tailored to the local context, and participants were recruited via existing ethnographic participants and snowballed through them and community leaders. To better understand differing design logics and evaluate design implications, representatives from local digital agencies and DM stakeholders were also invited to participate in the PD workshops.

The cultural engagement framework (Winschiers-Theophilus et al., 2019) was operationalised in the PD workshops, by structuring the four workshops similarly to the categories of cross-, inter- and transcultural engagement metaphor, while introducing a 'futuring' workshop as a means to elicit community aspirations and desires for technology design that looks beyond their immediate deficiency (Muashakele et al., 2023b). The PD workshops were iterative of learnings from prior PD workshops, as well as contextualised to the local setting with the inputs of local informants (Further details of each workshop design are laid out in Chapter 6).

Digital literacy workshops were conducted across four rural field sites to both recruit participants and provide reciprocal value through basic training on digital commerce tools. Co-hosted in several locations with PEDi (Pusat Ekonomi Digital), these sessions offered infrastructural support and networking opportunities while revealing gaps between policy ambitions and everyday digital realities.

Each workshop combined practical skills training with co-design activities, attracting participants who might otherwise not engage in formal research. The inclusion of government officers, platform providers, and internet-centre managers in three workshops fostered dialogue between RMEs and institutional actors, enriching data while fostering mutual understanding. The final workshop at the *Participatory Design Conference 2024* brought local entrepreneurs and international researchers together, deliberately reversing conventional hierarchies to foreground local expertise and affirm community knowledge as central to design (see Bong et al., 2024).

What the PD workshops provide is an avenue to gather both 'empirical' and 'actual' data, whereby events that are not observed in prior ethnographic studies could be elicited through PD techniques such as scenario-building, persona and wireframing. This elicitation aligns with the critical realist approach of seeking underlying events and mechanisms that empirical data alone are unable to provide.

3.2.3 Document Analysis

To complement the ethnographic and participatory phases, document analysis was incorporated to examine the institutional, policy and infrastructural dynamics shaping Sarawak's digital entrepreneurship landscape. These methods primarily addressed RQ3, which explores the structures, cultures and agencies interacting in explaining the engagement and disengagement of RMEs with DM platforms. Within a critical realist framework, these methods aim to surface the *actual* and *real* domains of inquiry, revealing underlying mechanisms of policy design, institutional practices and platform governance that '*shape but do not determine*' local agency (Archer, 1995).

The desk-based mapping of Sarawak's digital entrepreneurship initiatives (DEIs) [2] was conducted prior to fieldwork, to establish a macro-level understanding of the digital entrepreneurship ecosystem, of which DM platforms are situated within. Referencing established ecosystem mapping studies (Hruskova et al., 2022; Spigel, 2016), a systematic search was conducted (see Chapter 4.2 for details of the desk study).

Sources included federal and state ministries, private and civil society organisations, higher education institutions, media outlets, and published research. This search identified 150 initiatives, which were refined to 50 DEIs relevant to Isenberg's entrepreneurship ecosystem framework (2016), including policy, finance, culture, support, human capital, and markets. This mapping offered a structured overview of Sarawak's DEI ecosystem and functioned as a sampling for the initial set of elite interviews. Key findings of the desk study are summarised in Chapter 4.2.

3.2.4 Elite Interviews

Elite interviews were chosen as a key method of this thesis, as they focus on eliciting 'unique knowledge or information' from individuals with 'privileged perspectives' due to their experience and seniority in an organisation (Natow, 2020, p.160), as well as those who hold power to influence decision-making (Harvey, 2011). Elite interviews are distinctively able to provide data that are not easily accessible, and often even unattainable from other sources (Natow, 2020).

Within the context of this study, elites are policymakers and initiative implementors that holds power over how DEIs are designed and executed, as well as those that influence how DMs are encountered and experienced by RMEs. Following the desk study, structured interviews were conducted to collect primary data on how the six DEIs ecosystem domains operate in

[2] While the acronym DEI traditionally denotes "Diversity, Equity, and Inclusion," this thesis employs it to represent Digital Entrepreneurship Initiatives. This conceptual framework builds upon the author's contribution to the digital entrepreneurship ecosystem literature (Bong et al., 2026), and the term is utilised throughout the remainder of this work.

practice. The selection of the first set of elite interviews were informed by the prior desk study. The aim of the interviews was to verify and triangulate findings (Natow, 2020) from the desk study, through the unique perspective of individuals who have the strategic and operational perspective on DEIs in Sarawak.

This multi-stage design allows us to expand beyond previous entrepreneurship ecosystem mapping studies that solely focused on desk mapping (Khan, 2013; Spigel, 2016; Hruskova et al., 2022), thereby facilitating the collection of primary stakeholder perspectives (Chethan and Ramesh, 2020; Salas Gironés et al., 2020). Representatives of the 50 DEIs identified in the desk study were contacted via email and respondents were balanced by ensuring each ecosystem domain is represented. Interviews were conducted in-person and online. They were recorded, transcribed using an intelligent verbatim approach, and translated to English when necessary. The interviews focused on participants' assessment of Sarawak's DEI ecosystem, the key performance indicators of each initiative, and their perception of the DEIs in aiding target groups.

Second Set of Elite Interviews

Building upon the initial mapping and interviews, the elite interview strategy expanded across the rest of the data collection timeline. While the first set of interviews (conducted in collaboration with UTS and the Sarawak Development Institute) focused on programme implementors and DEI managers, subsequent interviews engaged a broader cohort of elite stakeholders. This included DM platform executives, third-party DM enablers, a Member of Parliament of a rural study site, and initiative managers.

These interviews offered insight into how platforms are designed, governed and managed; how digital entrepreneurship is framed; how DM platforms are perceived in rural authority districts; and how digital entrepreneurship initiatives are introduced and managed. Access to these stakeholders began

through institutional introduction, followed by connections developed during fieldwork.

Across both first and second sets of interviews, a total of 14 elite participants were interviewed, representing national and state-based ecosystem stakeholders and decision-makers (full list in Table 3.1). The inclusion of diverse elite voices, along with the desk-based study of the DEI ecosystem allowed the research to trace how institutional-level intentions and policy design translate into meso-level implementation and micro-level experiences (detailed in Chapter 4.2 and 4.3).

The format of the second set of interviews was also in-person and online, consisting of both structured and semi-structured interviews. Interviews lasted between 30 minutes to an hour and were predominantly conducted in English and Malay.

Table 3.1 – List of elite interviews and their affiliation (pseudonymised unless participant requested otherwise). DEI Ecosystem Domains are elaborated in Chapter 4.2

No.	Name	Sex	Affiliation	Job Role	DEI Ecosystem Domain
First Set of Interviews (n=7)					
1	Heineken	M	Digital Marketplace Platform	Chief Executive Officer	Digital Market Access
2	Nurul	F	Government Venture Capital	Manager	Digital Finance and Investment
3	Shaima	F	Digital Economy Centre	Manager	Digital Support and Infrastructure
4	Samson	M	Digital Policy-maker	Chief Executive Officer	Digital Policy and Regulation
5	Zaman	M	Digital Economy Hub	Manager	Digital Entrepreneurship Culture
6	Iwan	M	Government Agency	Executive Director	Digital Human Capital
7	James	M	Private Entrepreneurship Incubator	Secondary	Digital Human Capital
Second Set of Interviews (n=7)					
8	Shah	M	Digital Marketplace Platform	Chief Executive Officer	Digital Market Access
9	Tammy	F	Digital Marketplace Platform	Account Manager	Digital Market Access
10	Jonathan	M	Digital Marketplace Platform	Account Manager	Digital Market Access
11	Wong	M	Digital Marketplace Enabler	Account Manager	Digital Market Access
12	Jessica	F	Digital Economy Hub	Office Manager	Digital Entrepreneurship Culture
13	Izzati	F	Digital Economy Hub	Trainer	Digital Human Capital
14	Desmond	M	Rural Local Representative	Member of Parliament	Digital Policy and Regulation

Applying this approach to elite interviews and policy documents allows for the examination of whether the current development of digital technologies and digitalisation initiatives in Sarawak is transformative or reproduces existing inequities. Building on ethnographic and participatory design data, the additional datasets from the desk study and elite interviews complement the grounded insights from the agentic data of RMEs, offering a broader structural and cultural perspective, in line with the morphogenetic approach adopted in Research Question 3.

3.2.5 The Morphogenetic/ Morphostatic Approach (M/M)

Methodology

In addressing RQ3, Archer's M/M approach (1995) is employed. The framework proposes a sequential analysis of the temporality of structure, culture and agency, through the T_1–T_4 framework (Figure 3.4), whereby each is studied respectively for the purposes of analysis.

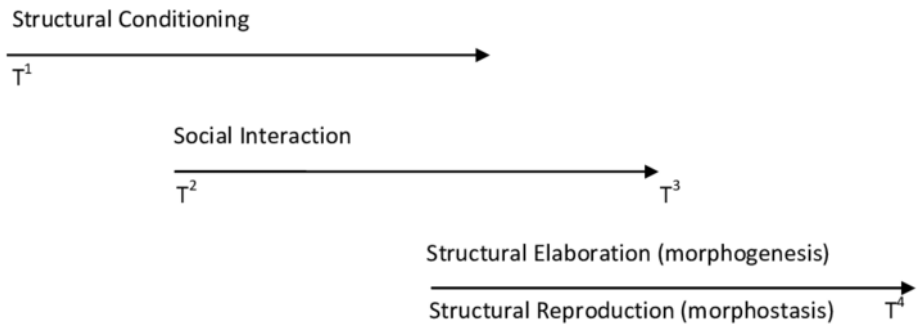


Figure 3.4 - Archer (1995), Realist Social Theory; The Morphogenetic Approach, Cambridge University Press, p.157

Through the M/M cycle, the analysis of why RMEs disengages from DM platforms is examined through the temporal account outlined below:

- T_1 (Structural and Cultural Conditioning): the pre-existing conditions that shape but do not determine action.
- T_2–T_3 (Social Interaction): how agents reflexively respond to these conditions by resisting, adapting, or negotiating them.

- T_4 (Structural and Cultural Elaboration): the outcomes of these interactions, whether morphogenesis (transformation) or morphostasis (reproduction of the status quo).

Morphogenetic/ Morphostatic Analysis

Our analysis draws on the broader thesis dataset and employs a focused explanatory lens through the T_1–T_4 framework outlined above. Building on the concept of methodological pluralism and explanatory depth in critical realism, the corpus is summarised, and the data mapped to T_1/T_2–T_3 and T_4, illustrating how mechanisms of RMEs' disengagement from DMs were identified. The multiple qualitative sources include:

1. Desk study of policy documents and digital entrepreneurship initiatives (50 initiatives narrowed from 150). The desk study focused on evaluating the coverage of initiatives available in Sarawak, the domain distribution of these initiatives, and the targeted beneficiaries.

2. Elite interviews with four DM platforms (n=4): Including platform CEOs, platform account managers and ex-managers, providing insight into structural framings of responsibility, performance, scalability, and platform design.

3. Elite interviews with DEI ecosystem stakeholders (n=10): Including digital policymakers, government agency executives, private incubators, digital hub and digital centre managers, e-commerce enabler managers, and a Member of Parliament in a rural town. These interviews provided insights into how digital entrepreneurship initiatives are designed, implemented and perceived, which underpin the digitalisation efforts in Sarawak.

4. Ethnographic fieldwork across multiple rural sites over a period of nine months, documenting RMEs' everyday practices and narratives of digital commerce.

5. PD workshops (4 sessions), where RMEs co-designed speculative marketplace concepts, highlighting local imaginaries of potential digital commerce futures.

This plural sources constituting this corpus reflects Archer's (1995, 2007) principle that explanation involves examining the structural, cultural, and agential domains of social life, each of which may be illuminated through different forms of methods. In operationalising this framework, T_1 is analysed as the structural and cultural conditionings that precede the observed phenomena, identified through DM platform design and logic, policy framing, initiative implementation, and infrastructural conditions. Data from elite interviews, document analysis were used to surface these understanding.

T_2-T_3 then situate RMEs interaction within these conditions, allowing the examination of the interaction or lack of between RMEs and DM platforms. The ethnographic data and PD findings were utilised in demonstrating how local actors respond to DM platforms within the existing T_1 conditionings.

T_4 then considers whether the outcomes of interactions result in change, or the reproduction of the initial structural and cultural conditionings. The ethnographic data, elite interviews, and PD workshop findings are used to determine whether change is evident or if existing conditionings persist. By analysing disengagement through the morphogenetic framework, RMEs' non-use can be viewed beyond its static condition as the outcome of dynamic processes unfolding over time, moving beyond empirical description to explain why mismatches persist within these contexts. Detailed analysis overview is further explained in Chapter 7.3.1

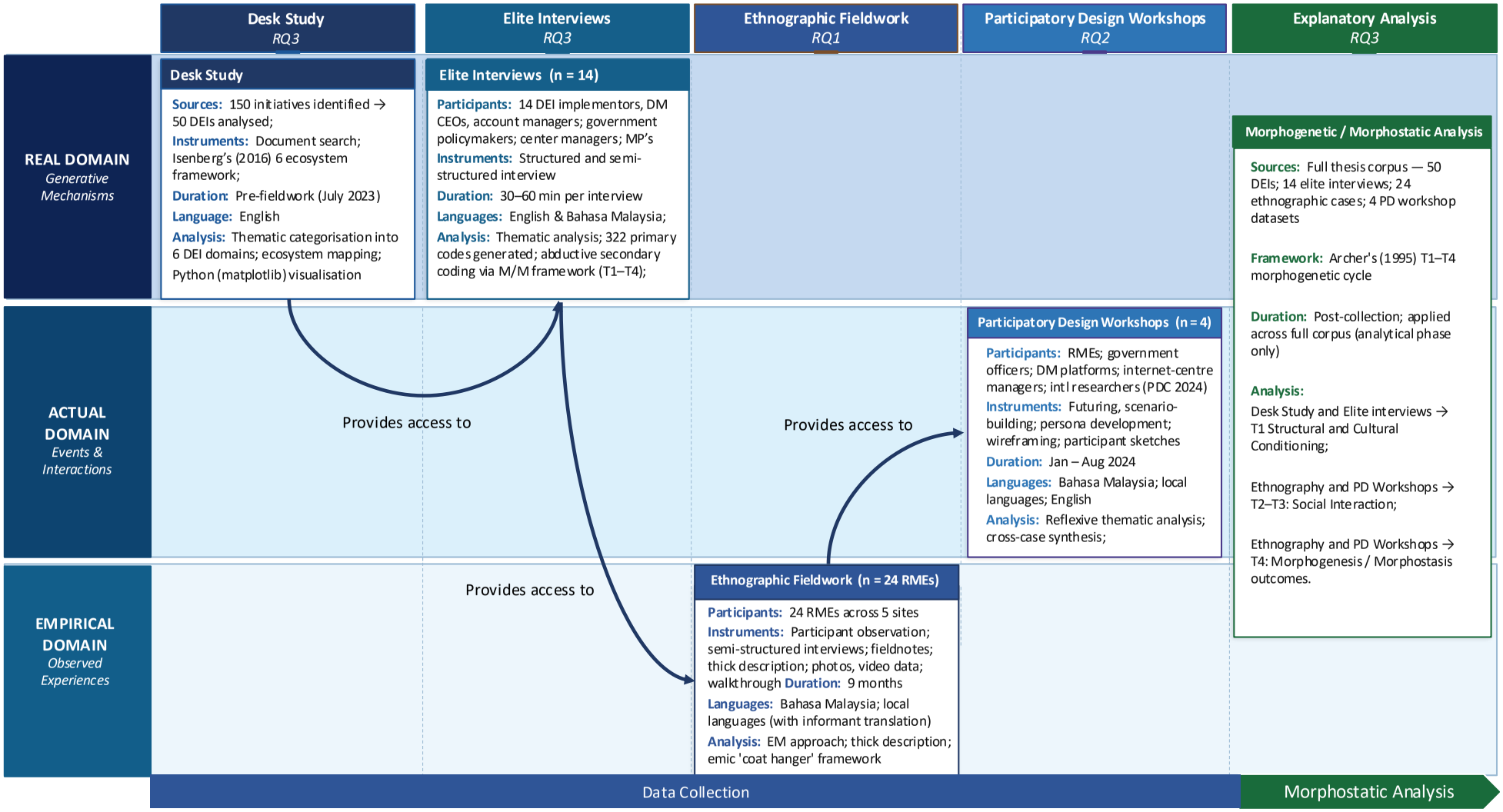


Figure 3.5: Multi-Method Research Design Across Critical Realist Ontological Domains

3.3 DATA ANALYSIS

Given the multiple sources of data obtained through the different research methods detailed above, the study employed a multi-layered analytical strategy, in line with critical realism's emphasis on both surface events and underlying mechanisms. This section details how each data sources were prepared, analysed and reported in the respective empirical chapters.

Desk Study

The *desk study* began with a document search of secondary data, resulting in an initial list of 150 digital entrepreneurship initiatives (DEIs), which were narrowed down to 50 that met the study's requirements (criterion laid out in Appendix D.3.1). Guided by the Isenberg's (2016) entrepreneurship ecosystem framework (Appendix D.1) and drawing on prior methods which involved desk-based classification followed by further analysis (Malhotra, 2021; Khan 2013), each of the 50 DEIs' objectives and target audiences were analysed thematically to categorise them into the six DEI domains proposed in this study (see Table 4.1 in following Chapter). These initiatives were then mapped onto the six entrepreneurship ecosystem domains proposed by alongside their respective target groups.

The desk study were then further triangulated through the conducting of 14 interviews with initiators and beneficiaries. The initiatives and beneficiaries distribution were mapped on Microsoft Excel, and visualised using the Python package *matplotlib*. The mapping outcomes and findings of the desk study are presented in Chapter 4.2.

Ethnographic Data

The *ethnographic fieldwork* consists of varied data (photographs, fieldnotes, videos, walkthrough studies etc.). These were analysed primarily using an ethnomethodological (EM) approach following the EM traditions of focusing on how work is organised by its actors and examining their reasoning (Garfinkel, 1988; Lynch, 2022). The ethnographic data of various kinds were redocumented through thick description (Crabtree et al., 2005) and documented in individual case studies.

Through an emic approach, the final output was reorganised into five 'coat hangers' as a way of structuring the presentation of data, similar to the EM tradition (for details of the 'coat hangers' use, see Chapter 5). Five mainstream business terminologies were used as coat hangers to hang the empirically rich ethnographic data, intentionally provoking the common understanding of terms such as 'micro-entrepreneur', 'business model', 'marketing', 'customer relationship management' and 'digital transformation', with the emic account of RMEs in relation to each coat hanger. This structure surfaced the descriptive contradictions, similarities, improvisations and values that are observed through the ethnographic account, providing deeper analysis in subsequent chapters.

Participatory Design Workshop Data

Participatory design workshop data, which included participant voice, transcripts, photography, videos and visual artefacts, were written up descriptively into individual workshop cases following each session.

These descriptive workshop cases were analysed using reflexive thematic analysis (Braun & Clarke, 2019), an ethnographically informed approach that draws on iterative theme development and grounded reflection across multiple data types. Each workshop was reflexively coded, attending to the participants' descriptors, expressed preferences, and design artefacts and sketches as primary data. Researchers' memos and fieldnotes were used to contextualise the participants' data. The codes were then aggregated into sub-themes, and further iterated into themes (see Appendix E.1.1 for the detailed progression).

After generating themes for each workshop, a cross-case synthesis of themes was conducted based on similar patterns, while aiming to maintain site-specific themes. The final analysis generated six meta-themes (Appendix E.1.2) that are reported in Chapter 6, alongside the artefacts from the workshops. Further detailing of the workshop data analysis and validation are in Chapter 6.3.

Elite Interviews

The *elite interviews* were recorded and transcribed. Transcriptions were then imported into NVivo for coding using thematic analysis (Braun and Clarke, 2006). Codes were generated based on the data's relevance to the research questions, generating a total of 322 primary codes. These primary codes were then recoded through a secondary coding based on the morphogenetic/ morphostasis sequence (Archer, 1995) using an abductive coding approach in locating them in relevance to the adopted framework (see Chapter 7.2.1), before arriving at the final themes (see Appendix E 2.1). The findings provide insight into how DM platforms are conceived and managed, alongside the design and implementation of digital initiatives in Sarawak. The elite interview findings and quotes were used in the morphogenetic analysis, particularly for the structural and cultural conditioning coding for T_1 (further explained in Chapter 7).

Morphogenetic Analysis

Morphogenetic analysis revisited the prior categories of data and coded them using the morphogenetic cycle framework of T_1 (structural conditionings) and T_2-T_3 (Social Interaction). Within T_1, codes were generated based on their relevance to structural or cultural conditionings that preceded the phenomenon of interest, namely the interaction of RMEs with DM platforms. From these codes, themes were generated by aggregating codes into thematic clusters. The three thematic clusters of T_1 were then subsequently used as a comparison to the coding of T_2-T_3.

The outcomes in T_4 were then identified based on an analysis of T1 – T3. Analytically, movement occurs between abduction (re-framing empirical observation through theoretical concepts), retroduction (asking what must hold for these practices to persist), and retrodiction (checking candidates against historical and comparative evidence), which are strategies used in

critical realist methodology (Rickly and Canavan, 2024). The findings of this analysis are written up in Chapter 7.

3.4 ETHICAL CONSIDERATIONS

This study received ethical approval from the University of Nottingham [Ethics Reference Number: CS-2022-R40]. All procedures complied with institutional ethical standards (see Appendix A.1) and respected the culturally specific expectations of the involved communities. Informed consent was obtained from all participants in the form of printed consent forms, translated into Malay for RMEs, and a mixture of English and Malay consent forms and digital forms for elite stakeholders and PD workshop participants.

Participant Compensation

Compensation was offered to all participants, but the form and amount varied depending on site-specific contexts. This variation was not arbitrary but carefully discussed and agreed upon with local informants, ensuring appropriateness across locations. For instance, in semi-rural areas closer to towns, participants received shopping vouchers redeemable at local malls. In more remote regions where such vouchers held little utility, participants were compensated with internet vouchers, seen as a practical and enabling resource that could support their digital engagement beyond the study. The level of compensation was also proportionate to the form and duration of participation. Those who engaged in long-term ethnographic observation received forms of appreciation that reflected the depth of the relationship, such as meals, travel support, or logistical aid during events. For participants involved only in interviews, a modest voucher was provided. Workshop participants received compensation in the form of meals, refreshments, or internet access support, depending on the location and infrastructure.

A unique context emerged during the fourth participatory design workshop, which was held at the Participatory Design Conference in 2024. For this session, local microentrepreneurs who joined as participant-collaborators

were invited to the conference dinner as a form of compensation. This dinner included formal recognition of their work and was attended by prominent figures, including the Premier of Sarawak. The participants wore traditional attire, and the event offered cultural pride, visibility, and meaningful engagement. While not monetary, this form of compensation was well-received and celebrated as a form of mutual respect and acknowledgement.

Ethical Tensions in the Field

Conducting fieldwork among different communities comes with their own set of challenges. Despite best efforts to be reflexive and sensitive to the needs of communities, various ethical dilemmas were faced during the fieldwork. The aim of documenting these challenges within the thesis is to provide a holistic picture of the type of ethical, personal and moral tension that such research would encounter.

One of the key tensions that was faced during the fieldwork was encountering the fragmented opinions within a rural site, whereby groups of villagers were mobilising resources to remove a social enterprise from the community. The social enterprise was my initial informant into the community. They were set up to support the rural farmers in accessing broader market access by purchasing organic produce from the village, to be sold in premium organic markets through professional marketing and packaging. Tension had been brewing during the course of my engagement, as large majority of the subsistence farmers do not plant organic rice, a crop dependent on various factors beyond just the intention of farmers themselves (i.e. position of their land in relation to water resources, availability of man power for organic farming etc.). There were also misunderstandings between local communities and the social enterprise, particularly on how profitable the latter was, and the seemingly enormous financial capital that they enterprise had access to in building an industrial-grade factory within the remote village, which in actuality was funded by various NGO grants but mistaken as a sign of profitability by locals.

My positionality as researcher allowed me to move between the social enterprise and the locals, eliciting deep insights and frustration from both parties. This situated me in an ethical dilemma on how much to mitigate in resolving their misunderstandings and tension, and how much independence I should maintain from intervening. There were multiple moments where I felt uniquely positioned to speak into the tension and had even drafted a letter that intended to urge the locals in slowing down their process of removing the social enterprise, encouraging them to consider a phased approach in order to acquire sufficient capabilities to transition. In the end however, I chose not to intervene in that instance, which remains a moral dilemma on whether outcomes would have been different if I did. The removal of the social enterprise eventually left organic farmers within the village without a stable source of buyer, while both the social enterprise and the local village also diluted their geographical branding and marketing after the selling of farm produce to existing customers ceased.

These encounters taught me the complexity of community-based and transformative research: that 'community' is as heterogenous as they are collective, with competing aspirations that needs to be acknowledge but are equally difficult to prioritise. For RMEs, individual sustainability and collective decision-making can both be complimentary as it is competing, and in this instance, RMEs' sustainability were de-prioritised, which had further impact on the broader economic sustainability of the collective.

Nevertheless, my PhD programme was awarded a Large Impact Grant in 2025, which afforded a post-PhD engagement focused on impact at the same community mentioned above. The local community was re-engaged through partnership with a marketing agency in supporting their livelihood development after the exit of the social enterprise (see Section 9.4).

Negotiating the Researcher's Role with Participants' Needs

Throughout the ethnographic fieldwork focused on RME' engagement with DM platforms, participants repeatedly expressed a desire for greater digital

literacy and access to relevant training. Often, RMEs articulate their need for guidance and advice in utilising digital tools and navigating DMs.

As a researcher, I often find myself wrestling with the tension between maintaining an observer's role for data collection, with responding empathetically to the immediate needs expressed by participant. On one hand, I was concerned of influencing participants' behaviour and potentially compromise the independence of data collection; while on the other hand, I became increasingly aware that the access and trust granted to me through the research process placed me in a unique position to offer forms of support that were often inaccessible through conventional training providers or formal institutional programmes.

Drawing from insights from the subsistence marketplace literature, particularly research that integrates transformative engagement through marketplace literacy initiatives (Viswanathan, 2010), I subsequently decided to structure digital literacy sessions as part of the broader research process. These sessions were conducted in combination with participatory design workshops (see Chapter 6). This approach afforded a pathway to address the immediate needs of rural participants, while also creating opportunities for meaningful data collection. The outcomes of these engagements ultimately informed the methodological rationale adopted in this thesis, which is discussed in greater detail in Section 6.2.

More broadly, the integration of a transformative agenda with research data collection offers a possible pathway for future researchers working on digital platforms and digital entrepreneurship in rural or subsistence settings. Researchers in such contexts may need to navigate a similar balance between understanding the realities of the research setting and recognising the potential for research processes themselves to contribute in addressing the needs of the communities being studied.

3.5 CHAPTER SUMMARY

This chapter has detailed the philosophical and methodological commitments underpinning the research. Anchored in CR's the methodological pluralism, the study employed ethnography, participatory design, elite interviews and document analysis in addressing the research questions. The multi-method approach was chosen as it enables both the descriptive analysis of empirical findings, while also facilitating the inquiry into generative, context-bounded mechanisms that better account for these observational findings.

The following chapter introduces the reader to the setting of the research – Sarawak. By laying out the historical, geographical, demographical and digital landscape, along with the researcher's access to the sites and participants, the chapter aims to set the scene for the empirical chapters that follow.

4

SETTING THE SCENE

This chapter sets the scene for the empirical analyses of the thesis. Its purpose is to provide the scaffolding for the upcoming chapters while also explaining the researcher's access to the field to ensure transparency and reflexivity. The chapter is structured through three levels of scene-setting: macro, meso and micro.

At the macro-level (Section 4.1) Sarawak is first situated in its broader historical, geographical and socio-economic context; followed by meso-level (Section 4.2) where the institutional and policy landscape of digital entrepreneurship is outlined through the desk study conducted (Chapter 3.2.3), within which digital marketplaces (DM) usage by rural micro-entrepreneurs (RMEs) is situated; and finally at the micro-level (Section 4.3), a brief description of the researcher's field access, background of research sites, and an overview of participant information. The chapter ends with a section on researchers' positionality (Section 4.4), providing reflexivity on how identity, language, and social positioning shaped encounters in the field.

4.1 MACRO: SARAWAK IN CONTEXT

To understand current DM engagement in Sarawak, especially among RMEs who are predominantly indigenous and residing in rural areas, it is important to first consider the broader historical and socio-economic background of Sarawak. The following section outlines Sarawak's history from pre-colonial states, periods of colonisation, its integration into Malaysia, as well as its

geography, economy, ethnic diversity, and infrastructure. These macro-level features establish the context within which contemporary DM technologies are deployed and interacted with by rural communities in Sarawak.

4.1.1 Historical Overview

Prior to European intervention, Sarawak, as a territory on the Borneo Islands was loosely governed by the Brunei Sultanate, with circulation of trade along riverine and maritime routes, and dynamic relations among indigenous groups (Phillips, 2016). Indigenous communities have engaged in trade, alliances, and raids, while the Bruneian authority was exercised unevenly through tribute, episodic control and frequent rebellion (Phillips, 2016).

In 1841, the Sultan of Brunei ceded governing permission to British adventurer James Brooke, a British explorer and former military officer from British-occupied India, for his assistance in suppressing local unrest (Ooi, 1997). Brookes and his family ruled over Sarawak for over a century as the White Kings (Brookes Heritage Trust, n.d.). In 1888, Sarawak became a British protectorate, retaining internal autonomy but ceding external affairs and defence to Britain. The colonisation period was said to have left Sarawak underdeveloped for decades, as Sarawak was kept out of major commercial activities in the region during the early 19th century (Ooi, 1997).

Following the Japanese occupation during the Second World War (1941-1945), Charles Vyner Brooke ceded Sarawak to Great Britain, which became a Crown Colony in 1946 after 105 years of Brooke rule (Ooi, 1997), amid widespread anti-cession protests (Sanib, 1985). Post-Second World War, Sarawak was drawn into negotiations on the formation of Malaysia as Britain prepared to withdraw from its Southeast Asian colonies. Critiqued as non-representative and elitist (Leigh, 1974), the Cobbold Commission (1962), led by Lord Cobbold, claimed to have gained broad local support without a referendum, propelling Sarawak to enter the Federation of Malaysia despite its limited consultation in forming the new nation alongside Malaya, Sabah and Singapore on 16 September 1963. The expedited process was largely seen as motivated by Britain's strategic aim to decolonise swiftly while

maintaining its strategic interests in Southeast Asia, thereby sacrificing local interests and rights to self-determination (Phillips, 2016).

Throughout these changes of powers, Sarawak continued to remain underdeveloped, especially in remote areas, which persist beyond the formation of Malaysia, as policy neglect and corruption continue to afflict the state (Raj, 2013), leading to unequal access to infrastructure, education, and economic opportunities (Solarin, 2021; Horn et al., 2021). This is especially evident among indigenous communities, where, even at present, some still lack basic amenities such as electricity, water supply, and road access (Tedong et al., 2022).

4.1.2 Geographical and Spatial Settlement

As one of the two Malaysian states alongside Sabah, situated on the island of Borneo, Sarawak is geographically separate from Peninsular Malaysia. With a landmass of 124,450 square kilometres, it is the largest state in the country by land area yet among the least densely populated (Ashari & Farouk, 2023). Home to 2.82 million people (Department of Statistics Malaysia, 2022), approximately 43% of its population resides in rural areas (Tey et al., 2019). This demographic profile highlights the continuing significance of rural life within the state, in contrast to the more urbanised Peninsular Malaysia.

The geography of Sarawak consist of coastal plain where major cities such as Kuching, Sibu, Bintulu and Miri are located (Figure 4.1), interior uplands inhabited largely by indigenous communities, and highland border areas such as Ba'kelalan and Long Semadoh, which stands more than 3000 feet above sea level. Transport and infrastructure vary dramatically across these terrains.



Figure 4.1 – Geography of Sarawak, East Malaysia. Source: Lands and Surveys, Sarawak, 1987.

4.1.3 Economic Overview

Economically, Sarawak generates an annual Gross Domestic Product (GDP) of RM140 billion (2022), accounting for 9.5% of Malaysia's GDP predominantly through oil, gas, and agriculture (Ashari & Farouk, 2023). Despite its significance to Malaysia's economy, inequalities in wealth distribution, infrastructural provision and rural-urban disparities remain significant. Sarawak, although classified as a high-income state in 2024, with a Gross National Income (GNI) per capita of RM73,100, exceeding the high-income threshold of RM63,800 (Sarawak Development Institute, 2024), risks obscuring persistent wealth disparities (World Bank, 2024).

According to a World Bank report (2024), Bumiputera [3] households in Sarawak and Sabah have recorded the lowest income across all ethnic

[3] Bumiputera comprises Indigenous groups accorded special recognition in Malaysia, accounting 71.8% of Sarawak's population in 2020 (Department of Statistics Malaysia, 2022).

subgroups in the country, revealing a rural-urban and racial disparity that aggregated figures fails to convey. Sarawak was also ranked third nationally in poverty, 9 per cent as of 2019 (Solarin, 2021).

While major urban centres contain a wide range of industrial sectors, ranging from manufacturing, education, and services, the majority of indigenous communities in upland and highland areas rely on subsistence farming and foraging as their main means of livelihood. Although efforts have been made to support tourist activities in these regions, particularly through federal initiatives such as homestays, in reality, not many have been able to transition into these market-facing industries (Kunjuraman & Husin, 2017).

4.1.4 Demographics and Ethnic Diversity

Sarawak has a rich and diverse indigenous culture, with 27 ethnic groups and 40 sub-ethnic groups (Zarina et al., 2017), many with their distinct language (e.g., Iban, Bidayuh, Melanau, Lun Bawang and inland communities collectively referred to as Orang Ulu), alongside sizeable Malay and Chinese population and a small Indian community. In this sense, Sarawak's population composition is unique in that its non-Malay indigenous groups collectively form the largest share of the state's population, whereby two fifths are indigenous communities (Yap et al., 2020). Cultural diversity is also visible in local culture, where Sarawak's capital Kuching has been recognised for its food heritage through UNESCO's 'creative city of gastronomy', in its indigenous cuisine influences and intercultural exchanges (Kong, 2023).

4.1.5 Infrastructural and Digital Inequalities

While urban centres are well-connected by highways, much of interior communities remain accessible only via logging trails, river transport and small aircraft. This uneven infrastructure continues to affect access to education, health, markets (Hamid et al., 2021; Morni et al., 2020). Sarawak continues to face ongoing digital inequalities with many rural and indigenous communities continue to experience limited connectivity, with cases of telecommunication towers built without active coverage remaining common

(Tabassum et al., 2023; Cheng & Zaman, 2024). This infrastructural disparity in turn, impacts RMEs' ability to engage with digital commerce and marketplace platforms.

Taken together, Sarawak's historical legacies, uneven geography, resource-dependent economy, ethnic diversity, and infrastructural inequalities provide the macro-level conditions within which DMs usage is situated. Against this backdrop, state and federal actors have sought to intervene directly through programmes, training, and policies designed to foster digital entrepreneurship. The following section examines this meso-level institutional landscape, drawing on a desk study that mapped the digital entrepreneurship initiatives to understand how digital economic participation has been promoted, structured, and, at times, constrained by state-led development agendas.

4.2 MESO: INSTITUTIONAL AND POLICY LANDSCAPE IN SARAWAK

Following the macro-understanding, the focus now shifts to the meso-level understanding of Sarawak, with a focus on the institutional and policy environment surrounding digital entrepreneurship. An understanding at this level provides us with the institutional context in which a combination of policy intent, initiative deployment, and their impact on RMEs can be understood prior to commencing primary data collection.

Sarawak presents itself as a notable context for investigating DM reception and use among its RMEs due to its distinctive combination of ambitious digitalisation policies and contextual challenges. The local government has introduced ambitious digital economy strategies over the past eight years, with goals of transforming its economy. Digital entrepreneurship has been positioned as a core driver of growth, explored further in the next section.

4.2.1 National and State Digital Strategies

Located in Southeast Asia, Malaysia is one of 11 countries in the region. Since the 1990s, Malaysia's national development plans have progressively prioritised digital transformation, in pursuit of being a knowledge-based and high-income economy (Malaysia Digital Economy Blueprint, 2021). The National Entrepreneur and SME Development Council (NESDC), chaired by the Prime Minister, allocated a substantial budget of RM1.35 billion to support micro-enterprises and a further RM2.65 billion to advance digitalisation, technology, and innovation (NESDC, 2021). Complementing these efforts, the Ministry of Regional and Rural Development provides targeted training and advisory services for RMEs (Ahmad et al., 2012). These initiatives indicate that research on RMEs and digital platforms aligns closely with both national and local priorities in Malaysia.

Sarawak has aligned with this national agenda through the *Sarawak Digital Economy Strategy* (2018) and the *Post-COVID-19 Development Strategy 2030* (2021), both of which position digital entrepreneurship as a central driver of economic growth. The *Sarawak Digital Economy Strategy 2018–2022* also emphasised technology adoption among rural enterprises, through creating more technology-driven SMEs. These strategies have been supported by multiple initiatives from federal, state, and private actors, aimed at catalysing the digital empowerment of local businesses through initiatives such as rural internet centres, digital innovation hubs, and entrepreneurship training programmes (SDEC, 2017; Abdul Ghaffar, 2022; Tham, 2023).

Despite this strong policy emphasis, inequalities in access to entrepreneurship support and digital resources remain pronounced. Studies have shown that rural entrepreneurs, particularly women and older populations, often face barriers associated with weak infrastructure, limited digital literacy, geographic isolation and rural-urban disparities (Hamid et al., 2021; Morni et al., 2020; Tabassum et al., 2023). These challenges exacerbate the digital divide and shape how entrepreneurs engage with the broader digital entrepreneurship ecosystem (Brooks et al., 2019; Brush et al., 2019; Bong et al., 2024). Hence, Sarawak offers a setting where strong institutional intent intersects with infrastructural and socio-economic constraints, presenting a

setting where DM can be studied for its impact and reception among the supposed users.

4.2.2 The Digital Entrepreneurship Initiative Landscape[4]

In order to understand Sarawak's institutional landscape in encouraging digital entrepreneurship (and within it DM entrepreneurship), a desk-study was conducted in mapping the 'digital entrepreneurship initiatives' (DEIs) ecosystem and their target beneficiaries. The objective of the pilot study was to systematically map the DEIs in Sarawak, to analyse the distribution and focus of DEIs across ecosystem domains and target groups. This allows for the identification of DEI gaps and overlaps**,** and provides insight into the broader policy contexts in which RMEs operate to better understand their engagement with DMs in Sarawak.

The mapping study provided empirical understanding of the DEI distribution in the state, and also demonstrated where DEIs have over-emphasised or under-emphasised in both domains and intended beneficiaries. The observed gaps between policy intentions and practical ecosystem management have implications for the accessibility of digital entrepreneurial programmes in Sarawak, especially among RMEs. Outcomes of this desk study have been used to inform the remaining research site selection, ensuring those with active DEI provisions, such as Padawan and Bawang Assan, as well as sites with minimal provision, like Long Semadoh and Ba'kelalan, are included.

The design of the desk study, the theoretical framework of choice, and the findings are presented below.

Overview of the Desk Study

Consistent with previous ecosystem mapping studies of entrepreneurial ecosystems (Hruskova et al., 2022; Spigel, 2016), the desk study examined secondary data from publicly available documents and websites to map the breadth of DEIs in Sarawak. The desk search period was from 2 – 23 August

[4] The desk study findings were written as a journal manuscript and submitted to the *International Journal of Entrepreneurship and Innovation*, currently under second review.

2023. The search included relevant information using keywords of '*entrepreneurship', 'digital', 'e-commerce', 'digitalisation, 'digital entrepreneurship'* and *'digital entrepreneurship initiatives'.*

Building on foundational studies of Sarawak's digital ecosystem (SMA, 2021), local government reports, institutional websites, mainstream and media publications, and research articles were searched through to identify initiatives aimed at digital entrepreneurship in Sarawak. The scope of search was confined to the following six sources:

1. Federal Initiatives (government ministries and agencies)
2. State Initiatives (government ministries and agencies)
3. Private Initiatives (associations, social enterprises, NGOs)
4. Higher Education Institutions (universities in Sarawak)
5. Mainstream Media (news agencies, online news platforms)
6. Google Scholar (published research in Sarawak)

This search yielded an initial pool of 150 initiatives spanning federal and state-level efforts. Guided by our objective of investigating only DEIs, these initiatives were further analysed and filtered based on their main objectives to focus only on initiatives within the domains of 'digital entrepreneurship'. The list was further refined to 50 that met this study's definition of digital entrepreneurship.

Theoretical Framework

Isenberg's framework (2016) was selected due to its suitability in conceptualising the institutional view of the DEI ecosystem through the consideration of the six key domains of policy, markets, finance, human capital, support and culture (see Appendix D.1). Unlike other digital EE frameworks that primarily highlight components and processes (Sussan & Acs, 2017; Elia et al., 2020), Isenberg's model offers a more strategic, institutionally grounded perspective, as demonstrated in Khan's (2013) work, which is more easily interpreted and action by local policy makers. This broader coverage addresses the need to capture multi-level influences shaping Sarawak's DEI ecosystem. Guided by Isenberg's framework, this study adapted the original six domains to the DEI context for this mapping study:

Digital Market Access, Digital Human Capital, Digital Support & Infrastructure, Digital Entrepreneurship Culture and Innovation, Digital Finance and Investment, and Digital Policy and Regulation. (Table 4.1)

Digital Market Access (DMA):	Digital Policy and Regulation (DPR):
• Digital markets and platforms • Access to markets beyond immediate locality • E-commerce platform infrastructure and adoption • Access to local and global digital markets	• Government policies supporting digital innovation • Data protection and privacy regulations • Intellectual property rights for digital products/services • Cybersecurity regulations
Digital Entrepreneurship Culture and Innovation (DCI):	Digital Support and Infrastructure (DSI):
• Promoting a culture of innovation and risk-taking • Encouraging digital literacy and skills development • Fostering a supportive entrepreneurial mindset • Collaboration between digital entrepreneurs and traditional business	• Availability of incubators and accelerators for digital start-ups • Access to mentorship and networking opportunities • Technical and business support services for DE • Access to co-working spaces and digital hubs
Digital Finance and Investment (DFI):	. Digital Human Capital (DHC):
• Funding sources tailored to digital ventures • Availability of venture capital and angel investors • Crowdfunding platforms for digital start-ups • Government grants and incentives for DE • Access to financial tools and resources	• Education and training programs in digital technologies • Retention and attraction of digital talent • Collaboration between academia and industry • Continuous learning and digital upskilling opportunities • Access to a skilled digital workforce

Table 4.1 - Typology of Ecosystem Domains of DEI adapted from Isenberg's Entrepreneurship Ecosystem Framework (Isenberg, 2016).

Drawing on the desk-based classification approach illustrated by Malhotra (2021), the desk study scrutinised each initiative's objectives and target audiences to categorise them according to the adapted six-DEI domain framework (Figure 4.5). This initial mapping gave us a structured overview of Sarawak's DEI ecosystem and set the groundwork for our subsequent primary data collection.

From the desk study, the target audience of each initiative was also mapped. An initial 24 categories of targeted groups were identified. These were then aggregated into six final categories (Figure 4.2). The categories include Entrepreneurs and Start-ups (ES), Micro, Small and Medium enterprises (MSMEs), Rural Entrepreneurs (RL), Technology and Innovation (TL), Educational and Public Institutions (EP) and Special Groups (SG).

Findings of Desk Study

At the federal level, governmental departments form the majority of the initiators (Figure 4.3), demonstrating the role of government as a key driver of DEIs. These include the Ministry of Science, Technology and Innovation (MOSTI), Ministry of Tourism, Arts and Culture (MOTAC) and Ministry of International Trade and Industry (MITI). Key implementors were predominantly government-linked agencies, some of which were responsible for multiple initiatives as seen through the Malaysia Digital Economy Corporation (MDEC), the Small and Medium Enterprise Corporation (SME Corp), and Cradle. At the state level (Figure 4.4), DEIs' initiators and implementors consist of a combination of governmental agencies, private companies and higher education institutions.

Target Group Mapping

The target audience mapping demonstrates that the existing DEI ecosystem caters to a diverse range of entrepreneurs, with the majority of the initiatives focused on Entrepreneurs and Start-ups (13) and MSMEs (12). A full list of DEIs is presented in Appendix D.2, and the acronyms of initiators and implementors in Appendix D.4.

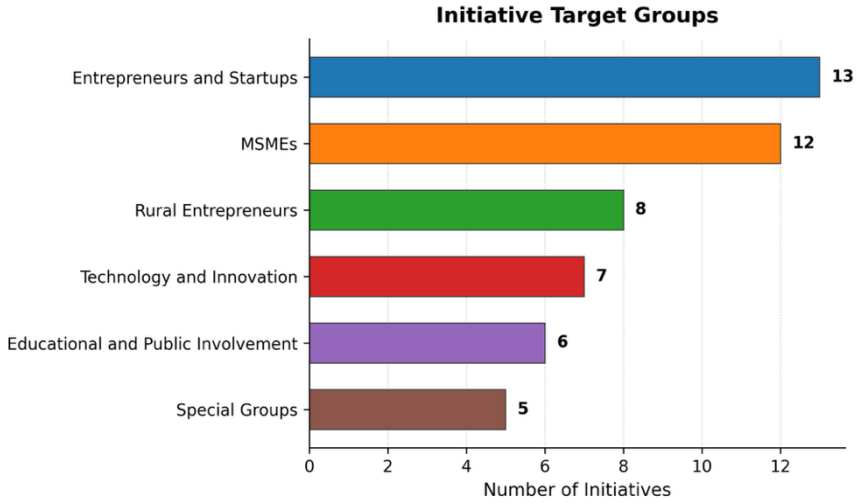


Figure 4.2 - Categories of digital entrepreneurship initiative target groups in Sarawak

The 50 DEIs mapped revealed the emphasis and gaps within the Sarawak's DEI landscape (Figure 4.2). Digital Human Capital (DHC) is the most dominant domain (state: 10 initiatives; federal: 12 initiatives), inferred as a

collective emphasis on digital competency training given the developing nature of the region's digital economy. This, however, also suggests an overemphasis on DHC at the expense of neglecting other domains.

The Digital Market Access (DMA) domain, while robustly represented (state: 7; federal: 9), reveals distinct targeting biases on Educational and Public Institutions, sidelining Special Groups and Technology and Innovation entrepreneurs. This selective targeting suggests a potentially narrow ecosystem strategy, possibly at the expense of inclusivity. Digital Culture and Innovation (DCI) receives limited attention (state: 5; federal: 5), primarily targeting Educational and Public Institutions and Entrepreneurs and Start-ups. The absence of DCI initiatives aimed at Rural Entrepreneurs indicates significant oversight or a lack of inter-agency coordination. This gap is particularly significant given the large number of rural populations in Sarawak and might inadvertently prevent rural areas from participating in the broader digital economy.

Digital Support and Infrastructure (DSI), considerably emphasised at the federal level (13 initiatives), demonstrates inclusive strategic intent across all target groups. Contrastingly, the state-level approach (7 initiatives) excludes Rural Entrepreneurs and Special Groups, highlighting a critical disconnect between federal policy aspirations and local implementation capacities. This lack of alignment could further exacerbate existing regional and social disparities, hindering balanced ecosystem development.

Financial support through Digital Finance and Investment (DFI) is substantially reliant on federal initiatives (13 initiatives), widely covering most target groups, notably Technology and Innovation entrepreneurs. Yet state-level financial initiatives, with just two initiatives exclude Rural Entrepreneurs entirely. This omission at both levels points to systemic challenges or oversight in extending essential financial resources to rural entrepreneurs, potentially limiting their growth and exacerbating urban-rural economic imbalances.

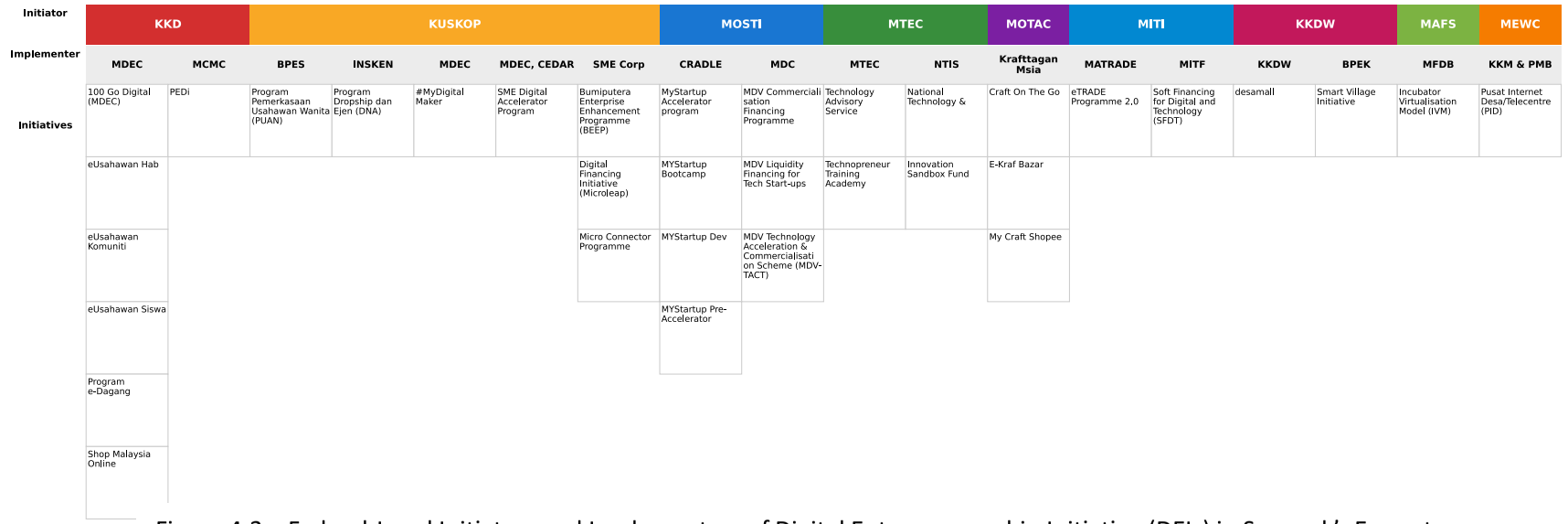


Figure 4.3 – Federal-Level Initiators and Implementors of Digital Entrepreneurship Initiative (DEIs) in Sarawak's Ecosystem.

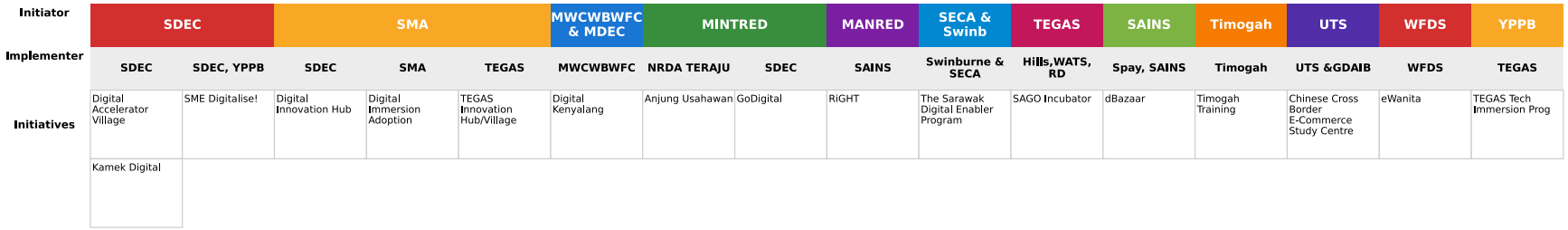


Figure 4.4 – State-Level Initiators and Implementors of Digital Entrepreneurship Initiative (DEIs) in Sarawak's Ecosystem.

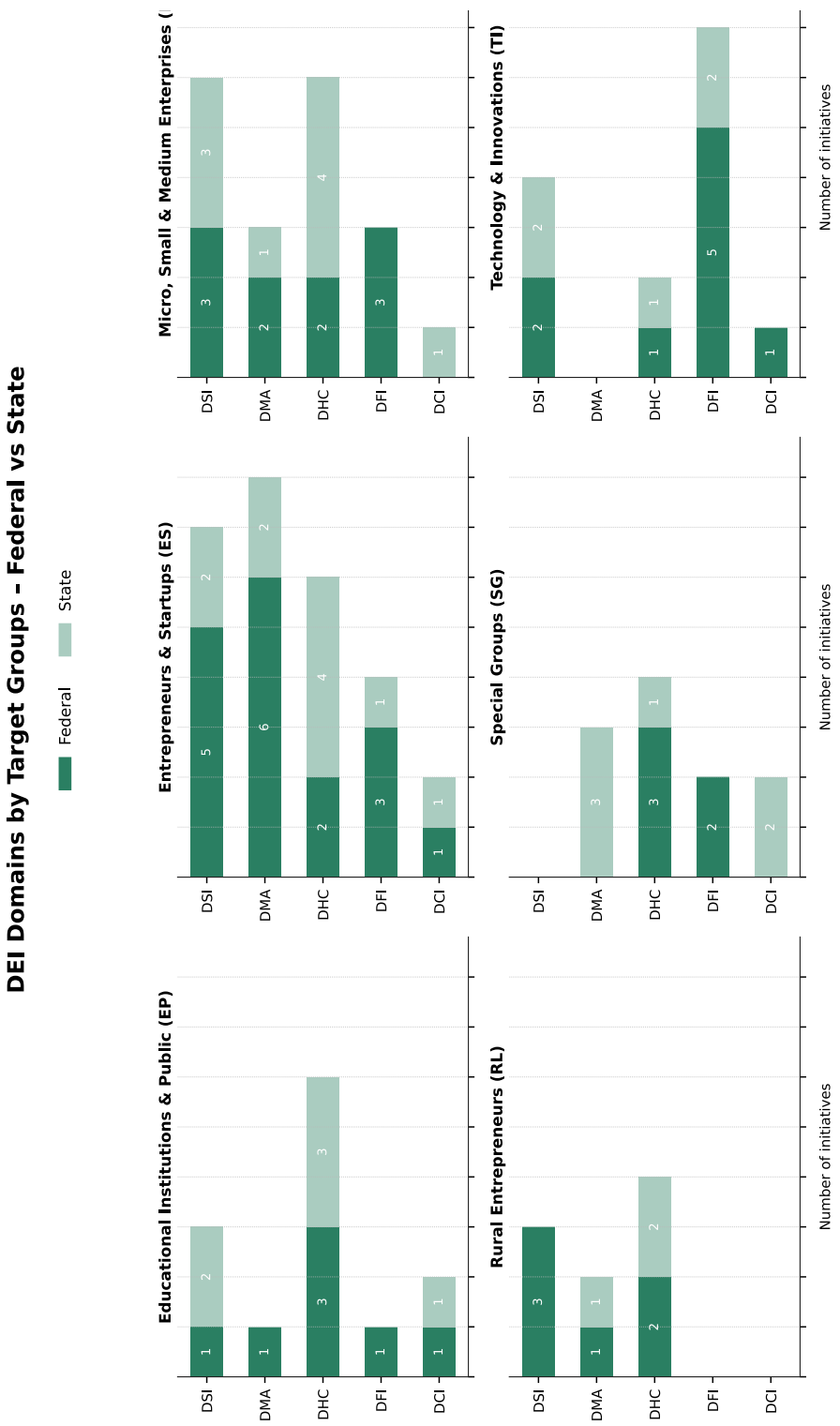


Figure 4.5 - DEI ecosystem domains and target groups at the federal and state levels present in Sarawak 2023

Preliminary Implications of Desk Study

i.) Fragmented Coordination Between Domains

Sarawak's strong focus on Digital Human Capital reflects worldwide trends (World Economic Forum, 2020), as digital skills are widely seen as essential for the success of entrepreneurial ventures (Zhou and Cen, 2024). Nonetheless, the proliferation of training initiatives has produced duplication, and less effective targeting due to overlapping agendas between ministries and agencies, with limited mechanisms for measurement and monitoring, echoing broader critiques that institutional silos weaken entrepreneurial ecosystems (Hruskova et al., 2022; Marinelli et al., 2023). Despite strategic national and state-level intent, the disconnect between policy priorities and institutional implementation results in significant duplication across DEI initiatives and an ambiguity in effective coordination.

ii.) Selective gatekeeping of financial capital

Sarawak's DEI ecosystem is shaped by the concentration of Digital Finance and Investment (DFI) initiatives on high-tech ventures. The findings suggest that Digital Finance Initiatives (DFI) instruments in Sarawak reflect a market-centric venture logic that prioritises return on investment (ROI) over inclusion. While this strategy aligns with Isenberg's finance domain (venture capital, angel investors, innovation funds) and may stimulate innovation, it exacerbates inequality by excluding the majority of local entrepreneurs in developing economies (Ermawati, 2023). Such skewing undermines the ecosystem's diversity and resilience while over-emphasising certain entrepreneurial pathways- such as tech-based entrepreneurship (Roundy et al., 2017), failing to serve diverse entrepreneurial profiles in developing settings.

iii.) Place-Space Mismatch and Relational Gaps

The exclusion of rural and marginalised entrepreneurs from multiple domains, including Digital Human Capital (DHC), Digital Finance and Investment (DFI), and Digital Support & Infrastructure (DSI) highlights the structural and cultural accessibility challenges faced by rural entrepreneurial

communities. Despite Sarawak's rural population (Tey et al., 2019), initiatives remain urban-centric and less accessible to remote populations.

4.2.3 Digital Marketplace Platforms in Sarawak

Finally, within the meso-level, a list of DM platforms available in Sarawak is compiled. An increasing number of DMs have been made available in the state in recent years, initiated by private enterprises and governmental agencies in Malaysia. Established examples include *Grab, Misi, Lazada*, and *Shopee,* together with several smaller and local players (Table 4.2).

A handful of DMs have nationwide coverage, particularly larger players internationally funded by global platform companies like Alibaba, Tencent and TikTok. Additionally, the Malaysian government also participated in the DMs landscape by launching marketplaces for RMEs under *DesaMall Online* (Bernama, 2020) and investing in private marketplaces like *dBazzar* (News Desk, 2024).

o.	Digital Marketplaces	Region of Activity	Domains
1	Shopee	National/ International	e-Commerce (General)
2	Lazada	National/ International	e-Commerce (General)
3	Queenpay	National	e-Payment; Services
4	Tik Tok Shop	National/ International	e-Commerce (General)
5.	Misi	National	Food Delivery
6.	Lyfe	Sarawak	Food Delivery
7.	Borneo shop	Sarawak	e-Commerce (General)
8.	Bego	Sarawak	Food Delivery; Services
9.	Timogah	Sarawak	Rural Groceries
10.	Beli-Beli	Sarawak	Food Delivery; Services
11.	Sarawak Pay	Sarawak	e-Payments; Services
12.	DBazzar	Sarawak	e-Payments; Services
14.	MYOTO	Sarawak	Logistics and Delivery; Services
15.	BIG Delivery	Sarawak	Logistics and Delivery; Services
16.	YummyHero	Sarawak	Food Delivery (Cake and pastries)
17	DesaMall	Sarawak	Products and Goods

Table 4.2 – List of Digital Marketplace Platforms available in Sarawak.

Notably, within Sarawak, there are more than a dozen state-based DM platforms, developed by local tech companies with some support from state investment. The proliferation of platform development and distribution in Sarawak provides a further rationale for studying their usability and impact among RMEs.

During the initial scoping trip in the spring of 2022, observations showed DMs had little to no adoption among RMEs in more remote settings, despite the application's initial intention of supporting these population. In more urban areas, it was visible that DMs were gaining traction, with many shops and footstalls displaying DM posters or QR codes that enabled customers to scan.

4.3 MICRO: STUDY SITES AND PARTICIPANTS

In this section, the access to sites and participants is described. Site-specific information is also furnished to provide the grounded context of the ethnographic chapter that follows.

4.3.1 Entering the Field

Access to the field was established through a series of institutional collaborations, stakeholder engagements, and community relationship-building efforts. The first community access was to Long Semadoh, as part of a preliminary scoping trip in March 2022. The key informant was a personal contact who ran a social enterprise with the rural farmers in the region. The scoping visit facilitated introductions to local RMEs, contextualised understanding of local challenges in digital technology use, and provided the potential site for the fieldwork proposal.

Upon returning to the UK from the scoping trip, the researcher met Prof Tariq Zaman and Dr Gary Loh from the *University of Technology Sarawak* (UTS) at an academic conference in September 2022, whose work was in community-based and indigenous design in rural Sarawak. The common interest facilitated the brokering of a 4-month visiting fellowship with UTS in July 2023, as both a means to access the field and to immerse in Sarawak's rural research scene. During the fellowship, a project was co-created with

colleagues from UTS and the *Sarawak Research Institute* (SDI) to better understand the DEIs in Sarawak (as laid out in Section 4.3.2).

This study provided a preliminary understanding of the state's digital economy strategies and its impact on entrepreneurs on the ground, within which DMs are situated. The project served as a crucial pathway into the networks of policy actors, programme implementers and entrepreneurial communities that further inform the broader doctoral study. These networks, in turn, created points of introduction to rural communities where DM participation was being encouraged, contested, or re-appropriated.

Locally appropriate engagement norms were followed across all sites, consulted with local informants and village leaders. Where necessary, permission was obtained from community heads. All participants gave informed consent, either verbally or in writing, in accordance with university ethics approval.

> *"Through the established relationship between the researcher and the local community, I manage to gain access into the Bawang Assan community fairly quickly. The goodwill of previous researcher who made the introductions has facilitated local trust as compared if I were to be building relationships on my own."* - From fieldnotes 11th August 2023

As the vignette above illustrates, the first community access from the visiting fellowship was to Bawang Assan, an Iban longhouse community. Introductions were facilitated by local researchers from UTS to *Bawang Assan's* village head and community leaders, with whom requests were made to formally permit the research to be conducted. Trust was extended through these relationships, enabling the researcher to move freely in the village. The UTS fellowship has also led to further introductions to RMEs in *Padawan*, a rural region outside of Kuching. Through the joint DEI project, interview participants, which included programme implementers, NGOs, government agencies, and DM facilitators, snowballed RMEs within their network to the researcher for further data collection.

In *Bau*, access was through the local Member of Parliament, with whom the researcher has had prior connection with from community projects back in 2013. Access to *Long Semadoh*, as mentioned earlier, was through an earlier scouting trip and a longstanding connection with *Langit,* a local social enterprise working in the village for seven years. Permission from the village head was sought through formal letters, facilitating multiple fieldwork returns. In *Ba'kalalan*, access was negotiated through an RME whom the researcher met at a rural produce exhibition in Kuching. As this site involved only two participants and access was through personal rapport, no formal village-level approval was obtained.

4.3.2 Fieldwork Duration and Frequency

Fieldwork spanned a total of nine months across three trips. The first was a half-month trip to Sarawak, including a four-day scoping trip to Long Semadoh in March 2022. The second trip to Sarawak was for seven and a half months, from July 2023 to February 2024, where majority of the data collection was done. A final visit was conducted in July 2024 for one month, during which sites were revisited, alongside additional data collection. During fieldwork, the researcher's base was primarily in Sibu and Kuching, which enabled repeated field access to the five rural sites.

The length of these visits depended on the accessibility of each location. In remote areas like Long Semadoh and Ba'kalalan, where transport involves flights and long off-road travel, trips last between one and two weeks. In other, more accessible rural sites like Bau, Padawan and Bawang Asan, multiple trips were made, aligning with participants' availability and local events, with occasional overnight stays depending on data collection. Some of the visits were structured around workshops or training sessions, while the majority of them were informal. Between visits, the researcher kept in contact with participants primarily through WhatsApp and phone calls as a way of sustaining relationships and logistical coordination. These repeat visits and hybrid forms of engagement helped build continuity over time.

Each field site presented a distinct configuration of rurality, infrastructure, digital connectivity, and platform engagement. We now turn to these five sites in elaborating on their context in setting the scene for the empirical work.

4.3.3 Field Study Sites

A total of five sites were included in the study, which spans across three divisions (Kuching, Sibu and Lawas) that represents South, Central and North Sarawak, across three rurality categories (accessible small towns, accessible rural and very remote rural). As Sarawak does not have a clear categorisation for rurality, this study adapted the Scottish Urban Rural Classification (2022) as a guide in classifying study sites based on distance to the nearest town (see Appendix B.3). Introductions to each site are provided below.

Bawang Asan, Sibu District (Accessible Rural)

Located 40 minutes from the city of Sibu, Bawang Asan is an Iban longhouse region comprising nine longhouses of varying size. Internet infrastructure is limited but present, with a Pusat Ekonomi Digital (PEDi) providing government-funded access and entrepreneurship training. Many residents commute to town for employment and education. Due to its rural location, conventional hyperlocal DM platforms such as food delivery and e-hailing platforms are largely unavailable in the region, though e-commerce DMs are. The traditional cultural practices of the indigenous community, such as residing in longhouses and maintaining community protocols, while interacting with government initiatives for digitalisation of rural businesses, make this an interesting site to study.

Padawan, Kuching District (Accessible Rural)

Similarly, about 40 minutes from the nearest city, Kuching, Padawan is accessible via well-developed roads. Internet coverage in the area is inconsistent, with some areas having connectivity while others none. The predominantly Bidayuh community has a PEDi. As a rural indigenous area with good physical accessibility, many residents commute to town for work

while maintaining some form of subsistence farming on their ancestral lands. Hyperlocal platforms in this region are also largely absent, except e-commerce platforms that are not bound by location. The confluence of proximity to urban centres, infrastructural disparities, and availability of digital entrepreneurship training renders Padawan an interesting site for study.

Bau, Bau District (Rural Town)

Bau is a rural town near Kuching that has a diverse ethnic composition of Bidayuh, Chinese and Malay. In recent years, Bau has undergone major infrastructural development, including the Pan-Borneo Highway, a major infrastructure project connecting the entire state of Sarawak, reducing travel time to and from Kuching to under 30 minutes. Internet connectivity is widely available, and DM platforms are active in both recruiting and promoting of their services. The town's existing DM activity and availability of broader infrastructure made it a distinctive site for study.

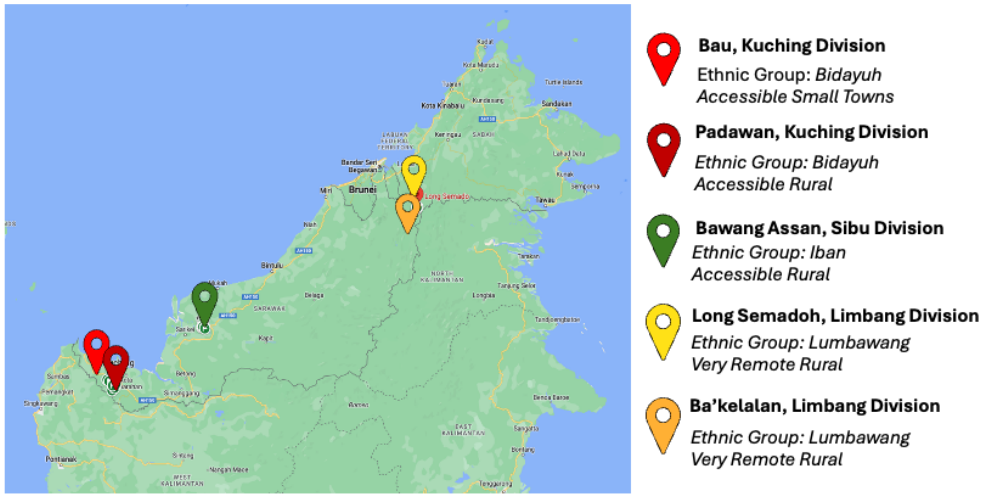


Figure 4.6 – The five field study sites in Sarawak with their respective majority ethnic group and rurality.

Long Semadoh, Lawas District (Very Remote Village)

Located 3000 feet above sea level, Long Semadoh is a Lun Bawang community in the highlands of Sarawak, accessible via logging tracks or by combining flights with overland travel from the nearest town, Lawas. Travel time ranges from 4 to 8 hours, depending on road conditions and mode of

travel. Digital infrastructure is minimal, with sporadic availability of phone lines despite the presence of telecommunication towers. Community communication relies largely on walkie-talkies or in-person communication. There is availability of satellite internet in specific spots, but vouchers need to be purchased to access, limiting its community uptake to those who can afford. Most residents are subsistence farmers, with some seasonal tourism and produce sales. DM platforms typical in Sarawak are not available in this area. Its remoteness provides a suitable context for examining the usability and reach of DM platforms in rural Sarawak, while also offering insight into learning situated digital practices within remote regions.

Ba'kalalan, Lawas District (Very Remote Village)

Three hours away from Long Semadoh, Ba'kelalan is also located in the highlands of Sarawak and borders Kalimantan, Indonesia. Primarily accessible by air, travel time is approximately 40 minutes by flight from Lawas, or eight to ten hours by road. Ba'kalalan comprises two main villages: Budok Nur and Budok Bui, both with differing levels of satellite internet access. The community is known for highland salt extraction, specialty agriculture, and both religious and non-religious tourism. Infrastructure and economic life reflect greater exposure to outside visitors and government-backed initiatives compared to Long Semadoh. The presence of conventional DM platforms remained limited, with broader use of social media for coordinating commerce. The remoteness of the village combined with relatively stable internet connection provides a contrasting context to the study sites of our investigation.

4.3.5 Participants

A total of 24 RMEs were engaged in the ethnographic field study, spanning across food and beverage, crafts, farming, tourism, and transport domains. There are a total of 12 males and 12 females involved in the ethnographic study, alongside wider family members and workers. Attempts were made to include the voices of these members as much as possible through informal conversations and observations.

Participants were selected using a purposive and snowballing approach, beginning with gatekeepers (local researchers, social enterprise located in community, community programme managers, MPs), who then made introductions to central community figures. From there, snowballing followed, ensuring alignment with inclusion criteria.

To participate, individuals needed to be active micro-entrepreneurs operating within a rural context. Ethnographic engagements ranged from one-off interviews at a single work site to multi-day observation across multiple work sites. Participants varied in their levels of digital literacy and internet access, with more remote communities generally having lower DM engagement, while sites like Bau and Padawan showed higher platform engagement.

4.4 RESEARCH POSITIONALITY

The researcher is a local Sarawakian from the capital, Kuching. Having spent 18 formative years in the state, with frequent annual returns since, he has developed a good command of the local culture, etiquette and locally spoken languages.

Coming from a micro-entrepreneurial family with experience in farming and market selling himself, this research is both relatable and deeply personal. Having exposed to the marginalisation of rural communities in Sarawak through personal and professional experiences, these lived experiences shaped the initial motivation to explore how digital technologies might support local enterprise.

The researcher remained reflexive throughout the project about how this background informed his sympathies, assumptions, and interpretive lens, particularly the risk of over-valuing technological solutions or projecting his own entrepreneurial experiences onto participants. In mitigating this, the researcher continually reflected on his decisions in the field, sought disconfirming evidence that challenged these assumptions, and foregrounded participants' own explanations, priorities and interpretation as the primary anchors of analysis.

The researcher is also a Chinese Sarawakian, which is often associated locally with urban affluence, education, and technological competence. Being a UK-based doctoral student added further layers of perceived distance and privilege. This power dynamic was especially present when discussing digital platforms, a topic that could easily be read as technical or alienating. The researcher was careful to frame himself as a student seeking to learn to manage perceived distance. Many participants regarded their involvement in the research as "helping a student," which helped equalised the interaction. Commonalities such as shared religious faith, the researcher's positionality as a young father, and the occasional presence of family during visits softened the boundaries. In many rural Sarawakian settings, family are social anchors, and these resonances helped shape more reciprocal relationships.

Most fieldwork was conducted in Malay, the region's lingua franca, in which the researcher had received 11 years of formal education. Nonetheless, efforts were made to improve their command of the language during the field period, especially in the more colloquial terminologies used in specific regions.

4.5 CHAPTER SUMMARY

The chapter concludes by interconnecting the macro, meso and micro layers of scene setting for this research, on which the remaining chapters build. These institutional and contextual accounts serve as an illustrative background for which the research is situated, providing the 'cultural entrée' (Harvey, 2015) that will situate the everyday work of RMEs in Chapter 5, the situated design imaginaries in Chapter 6, and the explanatory analysis of generative mechanisms shaping RMEs' engagement with DMs in Chapter 7.

The thesis now turns to Part Two, where chapters on the empirical findings begin. The upcoming Chapter 5 intentionally adopts a grounded approach of an ethnomethodological account to describe the ethnographic findings of what rural micro-entrepreneurship looks like practice within the setting of its actors.

PART II

Empirical Findings

'We're rural people, right? How would we be good at using digital technology?'

Rural Micro-Entrepreneur, Padawan

5

AN ETHNOGRAPHY OF MICRO-ENTREPRENEURSHIP IN RURAL SARAWAK

Having obtained an overview of the field from the preceding chapter, this chapter now examines in greater depth the research question, "*What does rural microentrepreneurship look like in rural Sarawak?*" through an ethnographic account. Adopting an ethnomethodologically informed (EM) approach, this chapter presents the everyday practices of rural micro-entrepreneurs (RMEs) within their work settings in five rural sites. What follows is a layered description of how rural actors organise their work, structured through what Harold Garfinkel (1988) described as 'coat hangers' – provisional hooks on which stories and observations can be 'hung'[5]. Unlike thematic categories that tend to abstract data into fixed meanings, coat hangers, aligning with the EM traditions, enable data to remain open-ended while being grounded in local and contextual practices and rationales.

In this chapter, the study adapts the notion of coat hangers not as data elicitation tools as originally used by Garfinkel (Lynch, 2022), but as a method of organising the ethnographic material and structuring the presentation (Crabtree et al., 2005). This is consistent with Lewis et al. (2018), who employed coat hangers as devices to 'hang the analysis' of data for the 'unpacking of findings', keeping analysis close to the observed rather

[5] In Garfinkel's original studies of laboratory science, 'coat hangers' were used as recurring contingencies or troubles to elicit practitioners' accounts of "how work gets done" (Lynch, 2022).

than abstracted overarching themes. This approach aligns with the EM's insistence on re-specification - re-describing formal categories through the lived practices and that constitute them (Garfinkel, 1988; Rawls, 2024). In this case, coat hangers were utilised to present emic accounts of RMEs' work, understood through members' own methods of producing and organising (Garfinkel, 1967; Rawls, 2008).

Similar to past EM studies in HCI and CSCW (e.g., Crabtree et al., 2005; Lewis et al., 2018), the study made use of conventional descriptors familiar to the anticipated readership. Specifically, this chapter is organised around five widely recognised business terms and concepts: *the micro-entrepreneur, business model, marketing, customer relationship management* and *digital transformation.* These terms, drawn from mainstream business and management discourse, are used both coat hangers and as 'foils' (Rosner et al., 2016), rather than as theoretical frameworks. Each of the coat hangers are reinterpreted through thick description, as a contrast to their often simplified concepts (Toyoma, 2010). The intention for this approach is to expose both the contrast and similarities between the conventional understanding of these terms and the situated realities of how they '*look like*' in rural Sarawak. In doing so, these coat hangers create strategic tension in juxtaposing the often top-down language of policymakers, funders and platform executives with bottom-up accounts of micro-entrepreneurship (Viswanathan et al., 2012).

These five terms were also selected because they reflect how entrepreneurship is conceptualised, measured and supported by policy and platform initiatives, and because they map onto the domains in which RMEs are positioned and evaluated. Anchoring this chapter in these terms aims to redefine their dominant and universal use, and to complicate and re-interpret them from the ground up. Each section therefore, is intentionally grounded, centring the voices of participants and prioritising their descriptive accounts over abstract theorisation.

In helping to navigate the ethnographic accounts across five sites and 24 RMEs, the demographic summary table of the RMEs, along with their primary domain of business, is presented in Table 5.1. The participant

names have been pseudonymised to protect anonymity, in line with the ethical requirements for this study (Appendix A.1).

Name	Sex	Age	Location	Ethnicity	Religion	Education	Primary Business
Michael	M	45-54	Bawang Assan	Iban	Christian	Secondary	Market seller
Jasmine	F	45-54	Bawang Assan	Iban	N/A	NA	Convenient shop
Nonda	F	45-54	Bawang Assan	Iban	Christian	Primary	Tailor
Belinda	F	25-34	Bawang Assan	Iban	Christian	Secondary	Cafe
James	M	45-54	Bawang Assan	Iban	N/A	Secondary	Lime farming
Winnie	F	25-34	Bawang Assan	Iban	Christian	Secondary	Touristic operator
Mary	F	35-44	Bawang Assan	Iban	Christian	Secondary	Food seller
Mohammad	M	45-54	Bawang Assan	Iban	Islam	Secondary	Transport
Nathan	M	35-44	Padawan	Bidayuh	Christian	Undergraduate	Packaged food seller
Renee	F	55-64	Padawan	Bidayuh	Christian	Primary	Coffee seller
Melinda	F	35-44	Padawan	Bidayuh	Christian	Undergraduate	Touristic operator
Noel	F	45-54	Padawan	Bidayuh	Christian	Secondary	Snack seller
Jenni	F	55-64	Bau	Bidayuh	N/A	Primary	Food stalls
Rose	F	25-34	Bau	Bidayuh	Christian	Secondary	Cafe
Cammy	F	35-44	Bau	Bidayuh-Chinese	N/A	Secondary	Food stall
Zi	M	35-44	Long Semadoh	Chinese	N/A	Undergraduate	Rice seller
Jessica	F	35-44	Long Semadoh	Lun Bawang	Christian	Primary	Convenient shop
Simon	M	35-44	Long Semadoh	Lun Bawang	Christian	Secondary	Café
Henry	M	55-64	Long Semadoh	Lun Bawang	Christian	Primary	Rice farmer
Rainy	F	55-64	Long Semadoh	Lun Bawang	Christian	Secondary	Rice farmer
John	M	65-74	Long Semadoh	Lun Bawang	Christian	Primary	Transport
Sidai	M	55-64	Long Semadoh	Lun Bawang	Christian	Primary	Salt seller
Liban	M	55-64	Ba'kelalan	Lun Bawang	Christian	Undergraduate	Homestay
Lunda	M	45-54	Ba'kelalan	Lun Bawang	Christian	Secondary	Touristic operator

Table 5.1 - List of the 24 ethnographic participants (pseudonymised unless participant requested otherwise).

5.1 A MICRO-ENTREPRENEUR

In business and policy discourse, a micro-entrepreneur is commonly defined as the owner of a micro-enterprise, typically employing fewer than five workers, generating modest turnover, and positioned as an 'early stage' yet generally a profit and growth-oriented endeavour (Bai et al., 2021; SMECorp Malaysia, 2022). The individual is also often assumed to embody traits associated with classic entrepreneurship: innovativeness, alert to opportunities and possessing the capabilities of transforming these into value and profit (as illustrated in Chapter 2.1 and 2.2).

We now turn to the ethnographic accounts of who a micro-entrepreneur is in rural Sarawak. Situated across five rural sites, this coat hanger gathers the accounts of RMEs who juggle multiple roles, arrange their work around family commitments, and organise labour through personal networks.

5.1.1 Managing Multiple Roles

In rural Sarawak, many RMEs juggle multiple 'ventures' or livelihood activities, switching fluidly between different hats, across different types of work. The multiplicity of work ranges from paid employment (whether full-time or part-time), to a host of diverse enterprising activities illustrated below.

Farming communities for example, tend their fields during planting and harvest season, while outside of those periods they engage in non-farm activities such as market trade, skilled work, foraging, hunting and hospitality. In Long Semadoh, farmers move from rice field cultivation and rice selling to foraging in the forest and engaging in carpentry, the latter of which is frequently remunerated work. When asked if they see themselves as an 'entrepreneur' (*'usahawan'),* 'one that endeavours' in the Malay language, a term associated with formal business expertise and profitability, a group of men in Long Semadoh echoed the following:

"Not yet, not yet. We'll call ourselves farmers, we're not at that level yet."

- Group of male farmers, Long Semadoh

This quote was gathered during the lunch break at a construction site in Long Semadoh, where men work as skilled house builders outside of their subsistence farming. Despite managing multiple 'income-generating' activities and in each, the respective process of cultivating, harvesting, packaging and selling, the identity of an 'entrepreneur' is rarely embraced.

A similar juggling of multiple work roles persists among those who do view themselves as entrepreneurs. Like the men in Long Semadoh (vignette above), Nathan juggles part-time paid employment with a host of entrepreneurial activities.

> *In his late twenties, Nathan runs four digital marketplace accounts in selling rural products. He works part-time as a 'rakan digital' ('digital comrade') to the local 'digital economy centre', and also as a contract freelancer with companies in Kuching fixing computers.*
>
> *The 'rakan digital' role requires him to support RMEs in embracing digitalisation in the form of selling products on the internet, and brand building through logo design and business profile building.*
>
> *At the same time, he is also in the process of setting up a self-developed marketplace platform, which he coded himself, named ENTREM. He expressed enthusiasm when speaking of his platform, with aspirations of scaling it to be the next digital marketplace platform in Borneo that would more adequately support local micro-entrepreneurs.*
>
> *- Fieldnotes from Padawan, Kuching, 2023*

Nathan, who resides in Padawan, 45 minutes away from Kuching, identifies both as an entrepreneur and as a supporter of local entrepreneurs.

> *"I want to help them sell their products online, which is why I have built this platform."* - Nathan, Padawan



Figure 5.1 - Digital Economy Hub ('PEDI'), where PDW1 worked part-time as a digital comrade. Such digital hubs have been set up across the country by the government to promote the digital agenda of building digital entrepreneurs in rural areas (2023).



Figure 5.2 - Nathan coding his digital marketplace platform from his home in Padawan (2023).

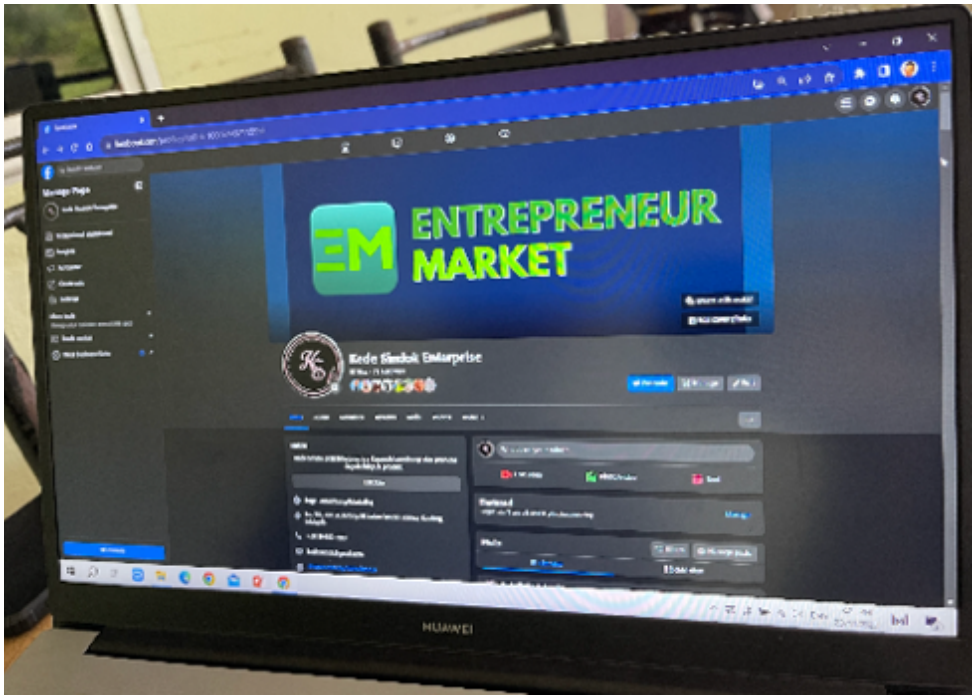


Figure 5.3- The Facebook Page for the marketplace platform – ENTREM, which stands for Entrepreneur Market (2023).

When asked about his rationale for juggling multiple roles, Nathan expressed that he "*has dreams of building a digital marketplace platform"*, but also *"still need to eat"*, indicating his need to generate sufficient income through the varied sources to provide for his livelihood. In later engagements in 2024, he had begun working as an e-hailing driver for a local DM platform company, before joining an IT company full-time as an IT support worker, giving up on digital commerce all together.

This juggling of multiple roles is seen in other sites, such as Michael, who is based in Bawang Assan and resides 45 mins away from the nearest city, Sibu. Like Nathan, Michael juggles between employed work and a host of other income-generating activities.

> *Michael, a village leader in his 50's, is a rural produce seller at the weekend market in Sibu, selling a range of products ranging from village produce to crafts. He also operates a homestay, a type of accommodation where visitors stay with the host-family to experience life in their setting. At the same time, Michael is formally employed as a village post-man, a work that he carries out 2 days a week transporting letters and deliveries between Bawang Assan and the post office. Due to his position as the*

head of 'homestay association' in the village, government visits for outreach and training would normally be hosted by the family, bringing in additional income.

As observed in the vignette above, Michael juggles multiple roles between employed work, predominantly part-time, with other work roles. These roles are numerous, ranging from brokering products for sale to hosting guests and weekend market selling.

We arrive back at the long house after a full day of obtaining market supplies. Immediately, Michael and the family: his mother and son, begin to load the goods off the car, and proceeded to prepare meals for me (as their homestay guest). After the meal, they went to their ancestral land to forage further plants for the market day, before returning home to prepare dinner.

- *Fieldnote from Bawang Assan, 2023*

Seen through the fieldnotes above, Michael and his family members switch between the role of market sellers to homestay hosts throughout the day. The changes between roles are not clearly announced with clear transitions to the observer, nor are the different tasks that they perform described as separate roles to switch between. Their identity as a 'micro-entrepreneur' is hence fluid, not neatly defined by business domains. They may vary throughout the week, and sometimes through the day.

This fluidity is also seen in the products that the RME sells. Instead of being strictly a *'vegetables seller'*, as Michael claims, the product that he prepares, packs, transports and sells at the market ranges from local foraged greens, fruits, wooden chopping boards, rice ladles to jellyfish.

"The vegetables are mostly 'sayur kampung'—local greens like 'ubi' and 'upah', and a variety of others. I also have some fruit. Besides that we make 'sengkalan'—the wooden boards for chopping onions or vegetables. My younger brother carves wooden rice ladles too. Recently we've started trying to sell jellyfish as well—just to see how the market responds at Tamu Indah or Sibu Jaya."

- Michael, Bawang Assan, Sibu

From the perspective of the local market, the role of the RME is varied and multiple. He is not just a vegetable seller, nor just a jellyfish seller, which he

described as a temporary 'testing of the market', seeing if there is a demand for it. As seen, the way the RME organises his role in the market is experimental, fluid and ever-changing.

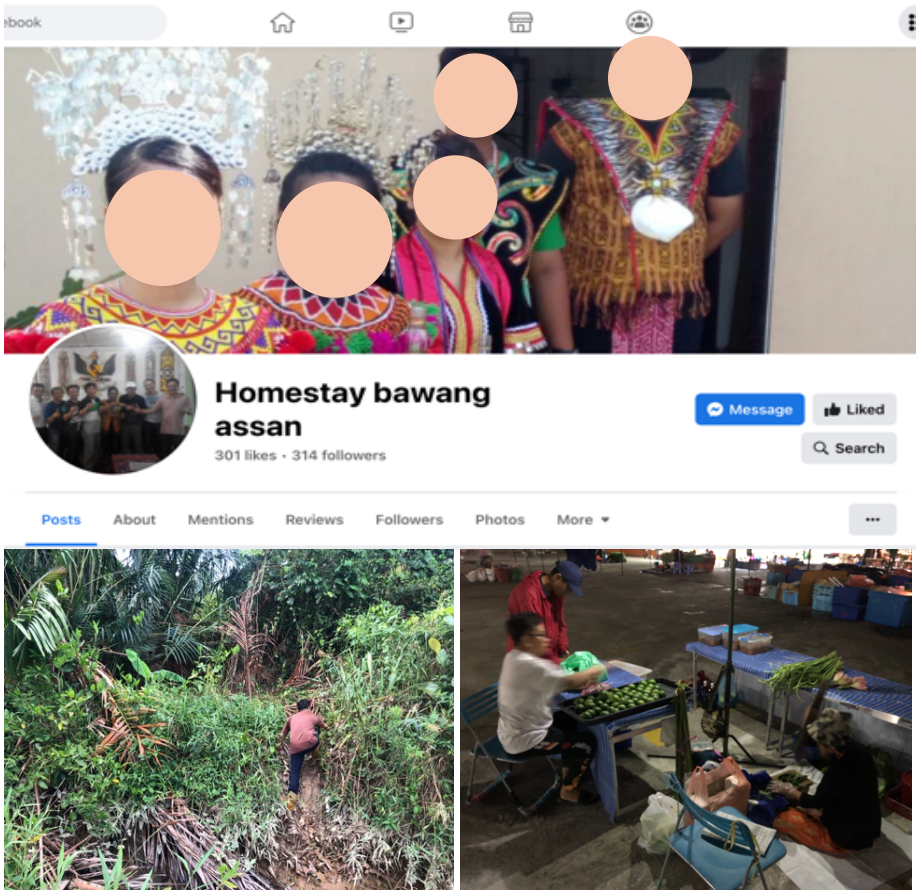


Figure 5.4- (a) The Facebook homestay account of Michael, whose last post was 11th March 2018. (b) Upon preparing lunch for the homestay guest, Michael proceeded to forage in his ancestral land in preparation for the weekend market. (c) Michael is setting up his stall at the weekend market at 2 am on Saturdays.

The juggling of roles also moves beyond the simple distinction between employed work and micro-entrepreneurship. Participants are also observed to operate multiple streams of businesses concurrently, managing different types of enterprises within the same space. This is exemplified through the vignette of Rose in Bau:

> *Rose is in her early thirties and runs a 'restaurant' in rural Bau, underneath a large limestone hill. Her restaurant, who she runs with her husband and 4 employees recently went 'viral' on social media, not from original content but through their customers. Plastered*

around the restaurant, however, are images of tourist destinations across Southeast Asia, including Indonesia, Vietnam, South Korea and Thailand. Rose and her husband recently joined as representatives of an Indonesian touring company, after being on tour as customers with the company.

They are now responsible for recruiting tour-goers from Sarawak. Rose and the husband will often be tour guides themselves, and constantly expressed their satisfaction with this work, showing the various videos and photos of their tour experience to me. Rose also has a Facebook account set up for the restaurant. Despite being a restaurant Facebook page, her husband uses the same account to post about upcoming tours, as well as photos of tours from the past.

This mixing of two distinct businesses in the vignette above, both in their physical premises as well as their digital spaces would seem confusing to an outsider. However, to the MEs and their customers, this is not problematic at all, as illustrated through the quote below.

"No, it is not confusing, because our customers know us...Many of them have my number and WhatsApp me every day."

- Rose, Bau

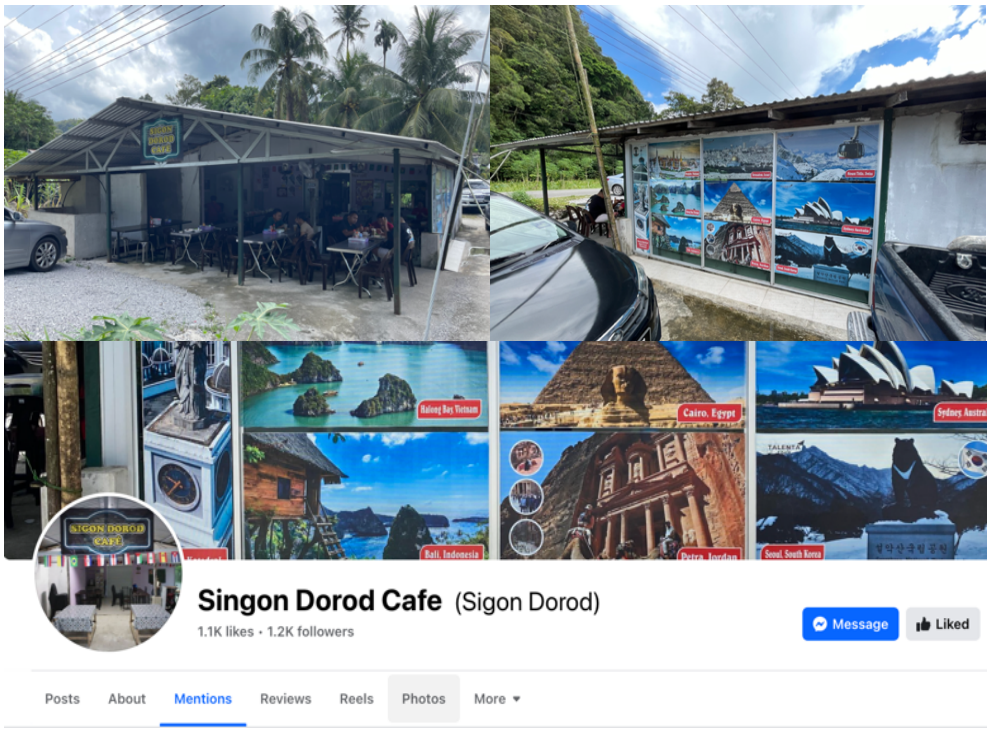


Fig 5.5- (a) Rose's restaurant in rural Bau. (b) Side poster of travel destinations for the travel agent business. (c) Facebook page of the café with destination images as its header image.

As can be seen from the vignettes above, RMEs' undertaking of multiple roles —juggling employment, foraging, digital selling, and managing multiple businesses— was described as part of how rural life is organised around seasonality, how the pragmatic need for income impinges on aspirations, and how opportunities are navigated when available.

In this sense, the 'micro-entrepreneur' in Sarawak can be viewed as a complex and multi-faceted figure, who can be a farmer working within seasonal cycles, a waged worker juggling multiple entrepreneurial activities, an e-commerce seller cum platform developer balancing aspirations with subsistence, or a restaurant owner blending two businesses into one. Their work shifts across various roles, rendering the micro-entrepreneur less a stable category than an ongoing way of organising livelihood in response to changing circumstances.

These roles, however, do not exist in isolation. They are shaped, constrained, and organised based on family life and communal needs. The following section explores how family commitments, particularly caregiving and schooling, anchor and define the temporal and spatial organisation of work among RMEs.

5.1.2 Organising work around family commitments

Beyond variability in entrepreneurship activities and roles, RMEs are observed to manage their work around familial commitments and care. The demands of household care and the needs of household members continuously shape the entrepreneurial activities that RMEs undertake. Some RMEs juggle these commitments with the running of their enterprise, weaving family responsibilities like childcare and school pick-ups in and between the running of the business. Others prioritise household care, relegating any enterprising activities to whatever hours remain.

Many of the RMEs, particularly those who are mothers and grandmothers, juggle child-care commitments with micro-entrepreneurship. Participants would either keep their young children within the same workplace as they

work, often from their homes, or if they are of school age, fit school runs in between running their businesses. Children's mealtimes, school hours, and extra-curricular activities are timeslots that RMEs would take into account when managing their micro-enterprises. We see this through the vignette below:

> *Belinda is a mother in her early thirties. She runs her café business from her home. She has set up a kitchen space, and a customer dining space by the veranda of her longhouse in Bawang Assan, Sibu. Her children is kept within sight during her work. When it is lunch time, Belinda would prepare meals for her children as well as her elder parents, for whom the café space is temporarily used as a family dining area. Customers are welcome to stay through this period, but many prefer to order digitally and have their meals delivered. Belinda takes these delivery orders via WhatsApp, and when making deliveries, she would bring her youngest son along, if there is no extra help at home to look after him.*



Figure 5.6- (a) Belinda's working space by the veranda of her home. It serves as a kitchen, a dining area space for customers, as well as family, and a space for childcare.

The juggling of family responsibilities are not always as seamless as the above. Caring responsibilities, especially when the needs are more demanding, considerably affect the ability of the RME to organise their entrepreneurial activities. We see this through Renee, a coffee farmer–collector from Padawan, who exemplifies the arrangement.

Renee works as a cleaner in an international school in Kuching from Mondays to Fridays, and runs a coffee bean collection centre for one of the main coffee roasters in Sarawak on the weekends. Being the sole breadwinner of the family, she juggles her coffee business with family caring duties and a full-time job. Her husband had a stroke few years ago and is unable to work, while she remains the main carer for her granddaughter who attends a Chinese primary school in Kuching. Reflecting on her coffee business, Renee shares of her priority for stability that the current cleaning job provides, in that she is not willing to give up the job to focus on her business. Her caring responsibilities does not warrant her risk taking of running the coffee business full-time, and also limits her aspiration of utilising the machinery that she has obtained through government grants to process her own coffee beans.



Figure 5.7 (a) – Renee has obtained coffee processing machinery, but struggles to have time to be trained to utilise them due to caring responsibilities. (b) Sketch of the coffee-making process as explained by Renee.

Seen in this vignette, the RME navigates between paid employment and her own micro-enterprise, structuring her work around ongoing caregiving responsibilities. She opts to delay or forgo commercial growth in order to provide daily care for members of the family, leaving her coffee business to residual spaces such as evenings and weekends. Such activities include the strenuous tasks of manually grading the coffee beans in the late evenings which she calls 'back-breaking work', further complicated by her deteriorating eyesight due to aging.



Figure 5.8- (a) Grading coffee beans by hand in the evening—work carried out by Renee during the limited residual hours available (b) Finished product of Renee's coffee brand, the beans of which she sells to the coffee roasters, and purchases back at wholesale price with the final branded packaging. She sells an average of 12 bags per month with a profit of RM4 per bag, bringing her total monthly profit to about RM48 (~£8.50).

Despite earning limited returns from her coffee business and receiving modest wages from her job as a cleaner at the international school, Renee prioritises stability over the pursuit of greater financial returns. Her decision is shaped by the ongoing demands of caregiving and familial responsibilities. As she reflects, the possibility of expanding her coffee enterprise may only become feasible when some of these responsibilities ease:

"Maybe when my granddaughter is grown up, I could fully focus on my coffee business. As of now, I would need to carry on working at the school. As you know, my husband is unwell".

- Renee, Padawan

The significance of caregiving responsibilities among the RMEs was particularly evident during an entrepreneurship training and research workshop conducted in Bawang Assan. Held on the longhouse veranda of *Rumah Jimbun*, the session brought together 19 participants, including four mothers who had to leave midway through the workshop to attend a school event for their children. The programme was adapted to accommodate their temporary absence. Despite attempts to schedule the workshop at a convenient time, three other participants were unable to attend due to this overlapping caregiving responsibilities. This highlights the competing demands faced by many RMEs and shows how household obligations continue to influence and limit opportunities for participation.



Figure 5.9 – Digital Training workshop attended by local RMEs, with a significant portion being mothers, who had to be excused mid-day to attend a school event.

Beyond mere variability in activities and seasonality, the work uncovers the commonality of many RMEs in integrating what is often deemed 'personal affairs', such as providing care, doing school runs or attending to other communal responsibilities with their 'main' income-generating work. As such, rural individuals involved in micro-entrepreneurship often navigate multiple roles, balancing household needs while blurring the boundary between livelihood and daily life.

Going beyond nuclear familial commitments, we now turn to how RMEs organise their work around the community in which they are situated. The next section discusses how RMEs organise their labour and manage 'hiring', offering a grounded perspective on the 'number of employees'[6] aspects of micro-enterprise that policy and business reports often associate them with.

5.1.3 Organising of labour around relationality

In many formal business contexts, labour is allocated based upon expertise with specialised roles assigned to workers to increase efficiency and productivity (Henrekson & Stenkula, 2016). Drawing from neoliberal and classical economic theory, division of labour is assumed to be an effective manner for optimising production, thereby increasing efficiency and ultimately profitability (Smith, 1776; Becker and Murphy, 1992).

In rural Sarawak, RMEs rarely access what is typically seen as the 'free labour market', where labour could be hired at the 'most effective' cost for their specialised skills. Instead, labour, if even conceptualised as such, is predominantly occupied by immediate family members, or the RME's immediate network, such as relatives, neighbours or village members. The division of labour is often based upon kinship and availability, as opposed to expertise and efficiency. This is illustrated through Nonda's example below:

> *Nonda, who makes home-tailored clothing and accessories in her longhouse in Bawang Assan, sells her final products through her daughters. Her two daughters who works in a factory in town, brings Nonda's items to work to sell to their fellow factory workers.*
>
> *– Fieldnotes from Bawang Assan, 2023*

As seen in this vignette, the 'sales team' is not 'hired' based on their expertise in marketing nor their salesmanship, but because they are accessible via kin and available. The daughters' work of transporting, promoting and selling

[6] One of the metrics used in defining a micro-enterprises by Asiedu et al. (2019) is 'having less than 10 employees'.

their mother's product on the other hand is also not seen as a job with sales targets, but a relational act of helping their mother in her micro-enterprise.

The geographical distance of rural regions from economic hubs further limits the availability of 'free market labour', increasing RMEs reliance on their immediate social network for trustworthy candidates. Jessica for example, who runs the convenience store in Long Semadoh, was given the job by the owners of the store because she is the sister-in-law, married into the family from a nearby village. Jamie, Michael's son and a university student, looks after all transportation for Michael's market selling because he is the only one who can drive and is available due to his present flexibility as a university student.

This fluid labour division is seen across sites, where family and relatives are actively working with and for the RME. Tasks were taken up as needed, without fixed job descriptions or a necessarily agreed wage, but through understandings of helping, sharing and being available within everyday relations.

When RMEs' engage in cooperative work and hiring, especially during seasonal work such as harvest peak times among subsistence farmers, this relationality of work is retained. Participants expressed their reliance on existing relationships, often within their immediate location, in seeking extra labour. In Long Semadoh, for instance, farmers engaged in a pooling of labour resources during the paddy harvest season.

Formed out of the *gotong-royong* culture– a locally practiced collaborative communal work often targeted at community-based work such as village maintenance- an RME accounts of how they would organise themselves in groups during harvest season to collaboratively harvest one another's fields. In this particular village, wages are paid to those helping but these earnings are used as donations to the local church instead of personal wages:

> *The women in Long Semadoh form groups of up to 8 women to work on one another's farms. This sharing of labour is used to fund the local church's women's ministry. The owner of a farm would typically pay RM15 per day to each worker. The wage, however, is used as a*

> *donation to the church ministry's budget as a form of fundraising. This enables workers to contribute to the church, while farm owners have their farms tended, and the church fund remains sustainable for supporting various women's ministry activities.*
>
> *- Fieldnotes from Long Semadoh, Lawas, 2023*

Beyond working together, the group shared a common cause (funding the women's ministry) and contributed labour to it. Work was organised to meet both the economic needs of harvesting (to be sold for household income), while also supporting the wider community. Wages remain evident in these collaborations, but are redirected back into the collective purpose rather than treated only as individual financial gain.

Section summary

Collectively, the first coat hanger explores how RMEs have performed, reasoned, and enacted their work practices in rural Sarawak, highlighting how they navigate multiple roles, manage family commitments alongside their business, and organise labour within their community. The conceptualisation of a micro-entrepreneur in itself, as demonstrated, has been contested by the participants. Instead of conceptualising their identity by the size of the business, revenue turnover, or number of workers (often the standard definitions for what constitutes micro-enterprises), RMEs show that their identities are fluid and continually evolving, based on their daily activities and the people they do it with. This provides us with a critical reflection when conceptualising who a micro-entrepreneur is when designing DM platforms for, which is explored in later chapters.

This section now turns to the next coat hanger of 'business model', in exploring the rationale of RMEs for running their micro-enterprises. The term 'business model', commonly defined by business discourse, often implies specific assumptions about how businesses are structured and how value is generated and delivered. The actual configurations of RMEs in rural Sarawak however, tell a different story. In the next section, this formal framing is used to juxtapose against how RMEs in Sarawak rationalise their businesses and what motivates them in the running of their micro-enterprises.

5.2 BUSINESS MODEL

A business model can be conceptualised as the architecture through which a firm creates, delivers, and captures value (Tauscher & Laudien, 2018). It is typically understood as the rationale of how a business is organised to sustain itself, most commonly through profit-making activities. In a rudimentary sense, a "good" model is typically distinguished by its ability to minimise costs while maximising revenue, with the margins between the two constituting profit. Within a capitalistic system, a business model is also frequently conceptualised as a signal of profitability to attract investments for further growth.

In using business model as the next coat hanger, this section aims to uncover the rationales that RMEs in Sarawak use in viewing their micro-enterprises, in navigating challenges and in framing who their business is for. This is done through highlighting the words that they use to describe their work, and the audiences that they consider in running a rural micro-enterprise. What emerges is a set of values and ethos that is anchored in cultural values of sufficiency, providing help to others, and a spiritual perspective that informs and guides the way RMEs view their enterprises.

5.2.1 'Cukup Makan Lah ' ('Enough to eat')

One of the recurring motivations expressed by RMEs in running a micro-business is to provide for their family's immediate needs, rather than the pursuit of growth and scalability. This stands in contrast to conventional narratives of start-up micro-entrepreneurship. Such an outlook is encapsulated in the phrase '*cukup makan lah'*, expressed by local RMEs. Translated literally as 'enough to eat', the phrase conveys both the subsistence orientation of RMEs' business goals in providing 'enough' for the household's needs, while also expressing a deeper and simpler sense of sufficiency and contentment when that is met.

> *In the remote highland community of Ba'kelalan, Sidai and his family continue a generational practice of harvesting salt from natural salt springs. The process is labour-intensive, involving firewood*

collection and long hours of boiling. The salt is then packaged into bags of 5 kg, sold to other villagers and long-time customers from neighbouring villages. While a government initiative supported a temporary rebranding project, packaging Sidai's salt into sleek bottles and nutrition labels in aiming to commercialise and scale their salt onto supermarket shelves, he found this rebranding exercise unnecessary. Out of courtesy he had entertained the temporary intervention, after much persuading, but have since decided to abandon the proposed rebranding and return to the initial means of selling salts in traditional plastic packaging.

"Cukup makan lah", expressed Sidai when describing the amount of salt produced per week, how much that can be sold for, and what their rough total monthly income is for the household.

- Fieldnotes, Ba'kelalan, 2024

As illustrated in Sidai's account, the underlying 'business model' here is not aimed at scaling production, which would justify the rebranding exercise to expand sales and maximise profit. The primary goal described is to secure 'enough to eat' for the household.



Figure 5.10 – The salt mining process in Ba'kelalan: Traditionally the salt produced here is packaged in bamboo leaves or plastic packaging. With the support of a government agency, seed funding was raised to rebrand the finished product into a more commercial packaging, done in the capital, Kuching. The end product, which is a small bottle of salt labelled with nutritional values, can be sold at a much higher

price. Despite so, Sidai and the family are not fond of these new forms of branding, and would prefer reverting back to how they have been traditionally selling them – in simple plastic packaging.

This approach is echoed by RMEs in the other sites, where enterprises often operate at a hyperlocal scale, frequently from their homes. The income generated often supplements existing household incomes, or more accurately sustains day-to-day expenses. This again contrasts with the mainstream side-hustle narratives of micro-entrepreneurship in more urban settings, where the goal often is framed as replacing full-time employment, or to achieve financial freedom (Pollack et al., 2019).

> *"Customers have been declining recently. It's not been as profitable as before, cukup makan lah (enough to eat) I'll say."*
>
> – Cammy, food-stall seller, Bau.

As described by another RME in Bau, Cammy's statement speaks to this sentiment of 'cukup makan'. Despite declining returns, Cammy continues to operate her business to meet her basic need. This outlook was similarly echoed by others, who described a tendency to accept rather than contest a fall in earnings.

> *"In the tropical belt, you are blessed with a lot of resources. Why do I need to strive? I can go down and start picking (foraging) stuff, and I'll have enough to eat."*
>
> – Zi, Rice Aggregator, Long Semadoh

Zi, an Australian graduate and originally from Kuala Lumpur, runs a micro-business that sources organic rice from rural farmers in Long Semadoh, repackaging and reselling them at the capital. Reflecting on his time in the highlands, Zi points to how the abundance of natural resources (i.e. fertile land, forest produce, sufficient crops etc.) shapes an approach to business where striving can feel unnecessary. In his view, the '*cukup makan'* rationale reflects a practical adaptation to local abundance, though he also wonders whether this comfort in sufficiency might at times limit the motivation of local RMEs to pursue growth or adaptation.

5.2.2 '*Tolong*' ('Help')

Another common rationale guiding rural microenterprise is the notion of '*tolong'*, translated as "help" in Malay. Relayed by RMEs of the study, running a business is often intertwined with acts of mutual assistance. RMEs do not always describe their work in terms of transactions, margins or profitability. Instead, they speak of helping others: helping a neighbour to access needed goods, helping a relative earn an income, helping a community to be self-sustainable. Some enterprises emerge from a neighbour's need for a product or service, prompting someone to start a convenience store. Others persist despite minimal returns or even losses, driven by a sense of duty to family, friends, or the wider community.

In business literature, benefiting the wider community through business is typically classified as a social enterprise. Micro-businesses in rural Sarawak often reflect this communal logic shaped by responsibilities and social values. However, their integration of social goals often occurs informally and outside formal categorisation. In observing rural sites across Sarawak, entrepreneurship is not purely centred on profit maximisation, as traditionally understood at least. Decisions about pricing, branding, and distribution were shaped by cultural and religious values, along with communal and social obligations. Participants often use supportive words such as 'helping' and 'supporting' when describing their business, framing their work primarily in terms of communal contribution rather than individual gain.

Renee, for example, described her micro-enterprise of purchasing coffee beans from local farmers for a roasting company as *'helping fellow small farm holders"* to sell their harvested coffee beans. Essentially playing the middle-person role between farmers and large corporations, the RME views her work as '*helping'* and providing markets for local farmers.

Consequently, many RMEs also emphasised communal benefit when outlining future plans, prioritising opportunities that could be shared with others in the village. The considerations when describing opportunities or income growth are constantly brought back to the ways in which the other RMEs in the community can be benefited. Jait's account illustrates this

rationale, a RME that operates a homestay and eco-touristic tours. He was asked about his ideal future for their business in a workshop in Long Semadoh, of which Jait described:

> *"(the ideal future of my business) will bring benefit to the community, from the perspective of income, (in providing) guiding (services), food and culture. This would also benefit the community from the perspective of learning of languages, whether English or Chinese, from whoever that visit."*

Instead of articulating a future centred solely on the RME's profits and growth, the RME's first response was how the enterprise would benefit the wider community. This vignette highlights the importance placed on distributing income-generating opportunities across the community, particularly by those with greater access to external markets. In such contexts, the boundaries between business and social obligation blur and are intertwined. The sense of sharing profitable activities with the wider community is linked to a sense of duty to one's own people, as well as to those who are deemed more in need.

> *In Lawas, Rainy coordinated the distribution of organic rice orders received from Langit Collective, a social enterprise run by Zi that purchases rice directly from remote farmers. Rather than selling all her rice to the social enterprise, Rainy subdivided the demand among several households.*
>
> *"When Langit calls me for rice, I will contact the farmers here. I have to divide among us all (equally)…I have to divide among us, because everyone needs (income) isn't it? Especially those that (their household) have students"* - Rainy, rice farmer, Long Semadoh

As the vignette above illustrates, subsistence farmers in Long Semadoh produces surplus rice beyond their consumption each year. These surpluses are exchanged for cash, if there is sufficient demand. Typically, the surplus rice is kept in barns for up to five years if unsold or unconsumed, before feeding it to livestock. As seen in the transcript above, rice farmer Rainy described how when there is a bulk order, she would divide it among the farmers in the village. Instead of maximising her profit by supplying all of her surplus to the buyer, the participant chooses to distribute the order 'fairly',

prioritising those who have a locally deemed urgent need, such as financing the education of young children. The business rationale of these RMEs, as explained by them, are organised around communal responsibilities and the collective good, as opposed to the profit maximisation models that conventional businesses typically operate under.



Figure 5.11 – (a) Paddy farming in Long Semadoh, where each household has dedicated plots of land. The work of harvesting is a communal act, where 3 to 4 households combine efforts to collaborate during harvest season. (b) Paddy is harvested, dried and packed in bags until there is a buyer, or for self-consumption.

The same logic of benefit-sharing can also underlie collective dissent, particularly when certain business activities are seen to concentrate gains among a few at the expense of broader community. When communal benefits are deemed unequal or business activities are seen to benefit only certain individuals, friction among the community is observed.

In Long Semadoh, some farmers expressed frustration as not all farmers cultivate ‘organic’ rice, a quality threshold set by the local social enterprise.

As a result, the benefits of rice-selling are not 'shared' among the wider community. A community leader, also an RME, expressed his dissatisfaction:

> *"This is an issue that we have been discussing for almost two years among the community. We have not yet talked to Langit properly, but we would like to. We want them to go through us, rather than us going through them… This has to do with the community's right…Like what I have said, there has to be benefit sharing."*
>
> - Simon, café owner and community leader, Long Semadoh

This has led community groups to organise resistance against ongoing 'inequality', even if when good number of villagers presently benefit from it. Decisions were discussed on ways to keep social harmony, and actions were taken to protect that harmony, even when it meant setting aside potential economic advantage.

This ethos of *tolong* (helping) reworks what is usually called a business model, conventionally understood through a profit-driven logic. For RMEs, micro-entrepreneurship involves sustaining social relations as much as sustaining income. In this values-driven 'model', value is accounted for in acts of support and reciprocity, of being helpful to others while being helped, which is not easily captured by conventional profitability and growth models.

Beyond the communal ethos, we now turn to the religious and spiritual aspects of RMEs to explore how they account for how these influence on their view of micro-entrepreneurship.

5.2.3 *Berkat* ('Providence')

In many rural communities across Sarawak[7], RMEs often invoke their religious faith as their guiding principles in operating their business. Running a business was often explained through the terms *berkat* (providence) and

[7] 50% of Sarawak's population identifies as Christian, and it is the only state in Malaysia that has a Christian majority. Many of the participants, particularly those from Long Semadoh and Ba'kelalan, are of the Sidang Injil Borneo (SIB) congregation, an evangelical Christian denomination founded in 1959 in Sarawak.

rezeki (livelihood as provided by God). Jessica, a shop owner in Long Semadoh put it this way:

> *"We believe in berkat ('providence'), sometimes there's a lot (of business) and sometimes there's little."*
>
> - Jessica, shop owner, Long Semadoh

Here, Jessica was responding to the question about the impact of new competitors in the form of cafes and restaurants in the village. Her immediate reply was that income comes from the divine, referring to her faith that 'God will provide', a common biblical belief in Christianity. In this account, business downturns and competition were not primarily explained through a market-driven rationale that calls for market-based responses, but rather through a religious and cultural rationale, expressed as faith in divine provision.



Figure 5.12 – (a) The premise of Jessica, where she manages a convenience store for a relative, and runs her own food business concurrently. (b) Pictures of the menu items which Jessica prepared for her customers. Her business has been impacted by the recent openings of two local food premises and cafes.

The notions of generosity, fairness and restraint in commerce are also seen as expressions of spiritual witnessing and as cultural preservation. Participants often describe making decisions such as setting prices, sharing orders, and branding, based on what they felt was fair and appropriate with their community norms, intertwined with religious and cultural traditions.

In Ba'kelalan, homestay and tour operator Liban described his services as an extension of Lun Bawang hospitality and religious identity. The Lun Bawangs' have a long-standing tradition of hosting travellers with food and shelter at no cost, shaped by their history of movement and mutual empathy. This practice predates Christianity but was reinforced through its adoption, as Liban explains by quoting one of Christianity's key tenets: 'Love thy neighbour'. Through the vignette below, we see how local culture and religious beliefs influence entrepreneurial motivations and development:

> *Liban explained that Lun Bawang culture emphasises hospitality without expecting financial return, rooted in their ancestral practice of offering food and lodging to travellers. This ethos continues to shape how the homestay is run: rather than following conventional business ideals of maximising profit through bookings, it is guided by the emphasis of readiness to host whoever arrives. Fatih is also central. Liban expressed a deep conviction to share his Christian beliefs to those that would ask.*
>
> *- Excerpt from fieldnotes, Ba'kelalan, 2024*



Figure 5.13 - The homestay that Liban and Ann runs from their own home, a six-bedroom house that was built over 20 years.

At the same time, Liban described the tension between their deeply ingrained cultural hospitality and spiritual values with the newer practices of charging for food and lodging. This tension is a continual negotiation that Liban and

his wife, Ann, hold while developing their homestay business through the government's initiatives for rural tourism, expressed in the vignette below:

> *"At first it is quite hard for us to accept this system, as we have been hosting friends since the 90s without any charges…We slowly accepted this new system, partly because the system says we have to."*

One of the main factors that eased the shift from traditional hosting to a charging model was the government's promotion of homestay initiatives[8] in rural areas, which provided greater grounds for legitimacy. The collective decision-making on price-setting such as lodging rates and tour-guiding rates, decided at the village level through the local homestay association also facilitates the RME's comfort in transitioning into the new 'business model'.

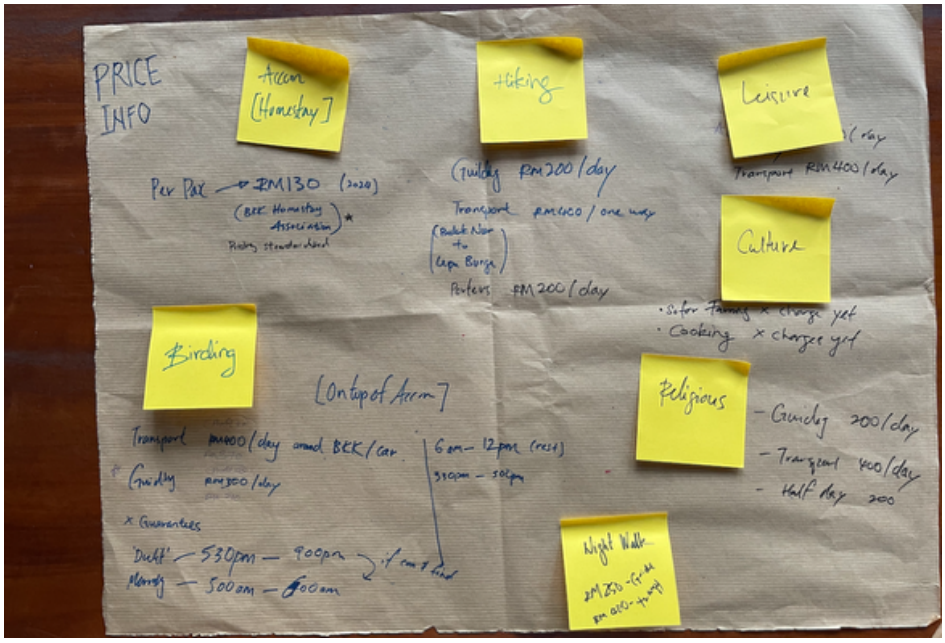


Figure 5.14 - Notes taken in consultation with Liban on the different services offered, with their corresponding pricing. These services include accommodation, birding tours, hiking tours, leisure tours, night walks and religious tours. Many times, he refers to the need to discuss with the homestay association on confirming the rate on a certain service, illustrating the communal price-setting practised in the community.

[8] The homestay initiative was a federal government initiative introduced in the 2000's amongst rural communities in encouraging rural economy through income-diversification activities such as homestay hosting. Eight households from a village could submit an application to join the initiative, and participants are required to attend training sessions in major cities before being awarded a small grant to furnish their rural homes for homestay purposes.

Despite the government's efforts to standardise this 'new system' for homestay charges, which required time and effort to accustomed to, Liban still aims to be generous in offering a warm and genuinely welcoming experience to his guests. *"Whenever possible, practice hospitality",* as explained by Liban. This meant not being too calculative with guests, avoiding conversations about charges aside from when necessary, and gifting parting gifts in the form of bags of rice, retaining the cultural and spiritual values of the Lun Bawang.

> *"We do not want to be like Bario, where they charge you for a cup of coffee in their home, or a plate of snack. We want to maintain our Lun Bawang culture of generosity, even though it is now a business".*

Observed from the participants, RMEs describe their work in ways that tied income-generating activities to what they saw as acceptable within their faith and culture. Echoing Jessica's terms of *berkat* and *rezeki,* Liban too used similar terms when talking about his homestay. Being a church leader in his community and one who attends daily community prayers at 5 am, Liban sees little need to promote his business. Instead, he trusts that whatever comes his way is provided and will be sufficient.

Section Summary

The 'business model' coat hanger has illustrated how rural enterprises are rationalised amongst RMEs in Sarawak. The rationalisation of sufficiency, communal support and the centrality of faith demonstrates the substantive reasoning of RMEs in these settings, and thereby informs how their enterprises are structured and operated. Although these 'models' of business are not uncommon (social enterprise or non-profit organisations may have similar rationales), the consideration of these business rationales and paradigms within DM platforms remains underexplored.

From understanding how rural micro-businesses are structured and reasoned, we now move to how they are made visible through the next coat hanger: 'marketing'. In these settings, marketing is rarely a standalone function, but part of everyday life, interwoven into relationships and enacted through

physical presence. This section examines how marketing is understood and practised, highlighting forms of visibility that are grounded in communal relations, physical proximity, and evolving digital adaptations.

5.3 MARKETING

In the conventional business discourse, *marketing strategy* is an intentional and often data-driven effort to reach, persuade, and retain customers. It is assumed to be a measurable and optimisable process of targeting specific markets in generating a return, as expressed below:

> *"Marketing is the science and art of exploring, creating, and delivering value to satisfy the needs of a target market at a profit."* — Philip Kotler, "Marketing Management", 11th edition (2003)

In rural Sarawak, however, "marketing" often does not manifest as planned strategic activities, but as a situational, spontaneous, flexible and deeply relational practice, woven into everyday interactions, word-of-mouth channels, community practices, and the evolving relationship between entrepreneurs and their customers.

In what follows, this section explores how RMEs in Sarawak approached "marketing". Their practices often exceeded, subverted or simply bypassed the formal logics of market segmentation and brand positioning. Instead, what emerges is diverse practices of promotion that are relational and place-based, embedded in proximity, digital adaptation, and communal norms. These practices resemble what one participant described, half-jokingly, *"kalau mahu, mereka beli lah"* ("if they want to, they will buy").

5.3.1 Physical Marketing

Observed amongst RMEs that operate a physical site for their micro-enterprise, whether a temporary stall, a permanent canteen or a community convenience store, the physical space is in itself their site of marketing. Here

marketing is enacted by physically being present. The rationale for informing others that the RME is present and their products are ready is not through proactive messaging or promotion. Instead, it is signalled through being consistently present in a site. An example of this can be observed through the vignette below:

> *Jasmine operates a convenient stall which she refers to as 'canteen'. The stall is located by the main road connecting Bawang Assan to the nearest city - Sibu. She sells a range of convenient items that allow nearby villagers to purchase without going into town. These include petrol, gas tanks, cigarettes, instant noodles, bottled water, snacks and the likes. Occasionally, she also sells seasonal vegetables from her farm, as well as hot food such as barbeque wings, which she would display by the front table of her canteen. When asked how she would let others know that there are these occasional items for sale, she said, 'just like that' and 'we wait'.*
>
> - *Fieldnotes, Bawang Assan, 2023*

Although many of the RMEs like Jasmine would say that they *'get customers'* by simply *'waiting'*, what is expressed is that they are *'waiting'* at a specific premise, often for long periods of time with their products. Buyers hence recognise their enterprise and product through frequent encounters, and the relational aspects that develop over time.



Figure 5.15– (a) The premise of Jasmine in Bawang Assan, Sibu. (b) Opening hours of her premises were stated on a piece of handwritten paper. (c) Occasional fresh produce is sold at her premises, displayed at the front of her canteen, with no display of promotional materials or price information.

The physical marketing of products can also be observed through the active curation of products in physical stalls or market booths. Marketing in these instances involves the arranging and rearranging of products, along with a proactiveness in engaging passers-by through a range of situated actions, conversations and even songs.

Returning to Michael who sets up a stall at the '*Tamu*', the indigenous weekend market in Sibu, how he meticulously arranged and curated his

products on the selling table is observed. Curation is dynamic and spontaneous, changing throughout the day depending on what is sold, and shifting weekly and seasonally in response to local availability. The seller's presence and invitation to engage are always detectable and accessible to all. The colours, fragrances and weight in the hand convey the product's value, the display and seller's engaged presence conveying trustworthiness, care and openness.



Figure 5.16 - Michael's table of products at the Tamu in Sibu, which he curates through the day. He is consistently at the same location within the indigenous market every weekend.

Aside from the consistency of physically being present, the ethnographic study has also noticed a prominent use of voice in physical marketing. Coined as 'market cries' or 'street cries', the use of this voice-based 'marketing' is observed through the various markets in Sarawak. A short, lyrical, melodic song, specifically crafted by the caller, sometimes just for a particular moment, with the intent of attracting the attention of passers:

> *"Dabai, dabai, dabai, dabai, tiga-enam, tiga-enam ja, dabai... Dabai, dabai, dabai, dabai tiga-enam, tiga-enam, leco, leco, leco."*
>
> **[Play Audio]**

> *Translation: "Dabai, dabai, dabai, dabai, three-sixty, three sixty only, dabai. Dabai, dabai, dabai, dabai three-sixty, three-sixty, hurry, hurry, hurry."*
>
> - Anonymous seller, Sibu Central Market

'Crafted' and 'performed' in-situ, local RMEs sing various 'promotional' slogans and melodies as a way of inviting attention, in attracting customers to engage. Similar to the curation of the selling table, the cries changes depending on what is available, which product to highlight at a given moment, and alters through the day.

With that said, RMEs also spoke about the difficulties of relying on this form of physical marketing, where goods need to be matched with customers who are present at the right time. Jasmine, who has previously sold barbeque chicken wings as a way to increase her income at her canteen, explained why she eventually stopped. Her account shows the challenge of physical marketing in its ability to match the timing of customers' interest with the perishability of products:

> *"I'm not entirely sure why it doesn't sell. Perhaps others do not know. (Only) when the wings have gone bad, then they would enquire, asking if I have them. So yes I do not sell them anymore".*
>
> - Jasmine, Bawang Assan

Nonetheless, selling products in person has been repeatedly expressed to be the preferred practice many of the RMEs in the study. This reliance on in-person sales meant that RMEs expected customers to be within proximity, even though in certain regions, this was understandably difficult. Speaking to a group of farmers in Long Semadoh, a remote village five hours from the nearest town by logging trail, they described their main challenge.

> *"Here we can plant anything (due to the fertile land). But the challenge is selling. We can't sell them."*

Despite the cited challenge of selling their produce, the farmers still expressed the hope that customers would '*show up in the village to buy the produce*' directly from them.

We see, then, that the physical enactment of marketing among RMEs is not a separate strategic activity, but an extension of everyday enterprise, which is enacted in person, through careful curation of products, face-to-face conversations and emotionally attuned engagements with customers. These acts are shaped less by formal marketing frameworks, and more by what feels practical, visible and resonates with local common sense. Alongside these visible practices, however, another form of marketing is observed, one that travels not through digital banners or signages, but through people.

5.3.2 Word-of-Mouth

For many RMEs, marketing begins not with formal strategies, but with the reliance on the word-of-mouth of personal relationship networks. This include family, friends, community members, as well as existing customers, covering both in-person as well as through digital interfaces. Marketing here is hence reliant on referrals, communal reputation and the local acceptance of their product.

This is seen in the contrast between a modern marketing intervention of Sidai's salt in Ba'kelalan (introduced in Section 5.2.1), with their traditional way of marketing via existing network of buyers:

> *Sidai and his family harvest and sell natural salt in Ba'kelalan. The distinctiveness of the product, and the reputation of the endeavour is locally recognised and appreciated, believed to be more nutritious than normal sea salt. As Sidai explains, "People around here ask, and we sell." Customers from existing village and neighbouring towns would make orders, already aware of the product and its quality. He does not actively promote the salt outside of existing network, nor does he consider expanding production.*
>
> *While a government initiative supported a repackaging project - branding the salt into sleek bottles with nutritional labels, the local*

> *community found the price excessive and the style unrelatable. "The people laugh when they see these bottles and their price," said Sidai. Having been in this trade since his youth, Sidai has no plans to carry on with this new form of packaging. He prefers selling his salt in plastic bags, the practice that he had been used to, relying on his regular customers and those who ask.*

As seen in the vignette above, the RME relies on his personal network and existing customers as means of marketing his product. Even when there is a temporal marketing intervention, experimented with through the aid of government agencies in rebranding his product with more 'marketable' visuals and packaging, this was not viewed as 'better' marketing. The irrelevance of these new marketing strategies within his community network and existing customers has contributed to his decision of reverting back to his original ways of selling - through word-of-mouth of his existing customers.



Figure 5.17- The Ba'kelalan salt. The bags are Sidai's existing packaging, sold at RM40 per 1000g. The bottled packaging is from the rebranding exercise supported by the government agency, sold at RM18 per 100g.

This is seen across the different sites, where RMEs even when possessing digital assets such as websites and social media accounts, revert to the relational marketing of their business to others.

In Bawang Assan for example, Michael who also runs a homestay business relies fully on the recommendations of existing customers in recommending customers. Despite having a Facebook page and a website for his homestay, set up by university students through collaborative projects, Michael treats them only as a location pinpoint, and actively discourages others from using these sites.

> *"I'd advise you not to use (the website). It would bring you somewhere else. Just use 'Michael Homestay' (on Google Maps) and you will find us".*

Although there are potential usability challenges for RMEs in managing technological platforms established through external interventions, Michael's resistance to platforms set up for his homestay demonstrates his lack of utilisation of these digital sites for 'marketing'.

In other communities, word-of-mouth is often the only means of channelling the products or services provided by RMEs. RMEs would share their new services or products through their social circles, of which friends and relatives are encouraged to share it through their social network.

> *"Yes we use Facebook to share of our services, and my friends will share, share, share."*
>
> - Jenni, Food Micro-entrepreneur, Bau

Speaking colloquially, Jenni and Rose (introduced in 5.1) in Bau enthusiastically expressed their means of 'getting the word out', where they post it on their social media channels and have their friends and family 'share' it. They do not use paid advertising, as afforded by these platforms, but rely on their social circles to share the message. Marketing here heavily depends on personal networks and the relational networks of those they relate to.

5.3.3 Solidarity Marketing

Aside from the utilisation of immediate social network, RMEs' were also observed to engage in forms of marketing that extend beyond conventional word-of-mouth. Differing to what marketing literature typically refers as

'earned media', where an enterprise receives favourable reviews or organic endorsement that enhance visibility, RMEs rely on a qualitatively different dynamic. Customers of these RMEs are seen intentionally 'helping' and 'supporting' the RMEs with word-of-mouth marketing because they recognise their limited digital capacity and wish to reciprocate relational or social obligations.

Customers in these cases, often being connected by word-of-mouth themselves, help create awareness by passing on the enterprise's contacts to their social circle, some even creating content to post on social media platforms to promote the RME's services and products without any expectation of compensation. Customer recommendations here operate partly as a signal of quality, but more so an act of advocacy and goodwill.

This is exemplified through Melinda and Wes's eco-touristic business in rural Bengoh, one hour from Kuching. She and her business partners are not acquainted with digital media and marketplace platforms, but instead rely on her past customers to 'help' promote their services:

> *"They happen to know me, from other people… My guests are the ones who help me. They post about us on different platforms and promote our contacts on their posts. I'm shy to admit but this is how it is. When customers ask whether we have any social media platforms or content, we would jokingly ask, 'You could help us perhaps."* - Melinda, Eco-tourism, Padawan.

Referred to as 'Jurassic World', a termed also coined and popularised by past customers, the now-viral touristic site in Padawan known for its lush highland scenery and cascading waterfalls are promoted mainly by past customers and through word-of-mouth. The RMEs do not operate a website or create promotional materials. As much as they would like to, they express their lack of capacity and skills in doing so, instead they work with past customers that 'help' in supporting their business by sharing content and passing on the RME's contacts.

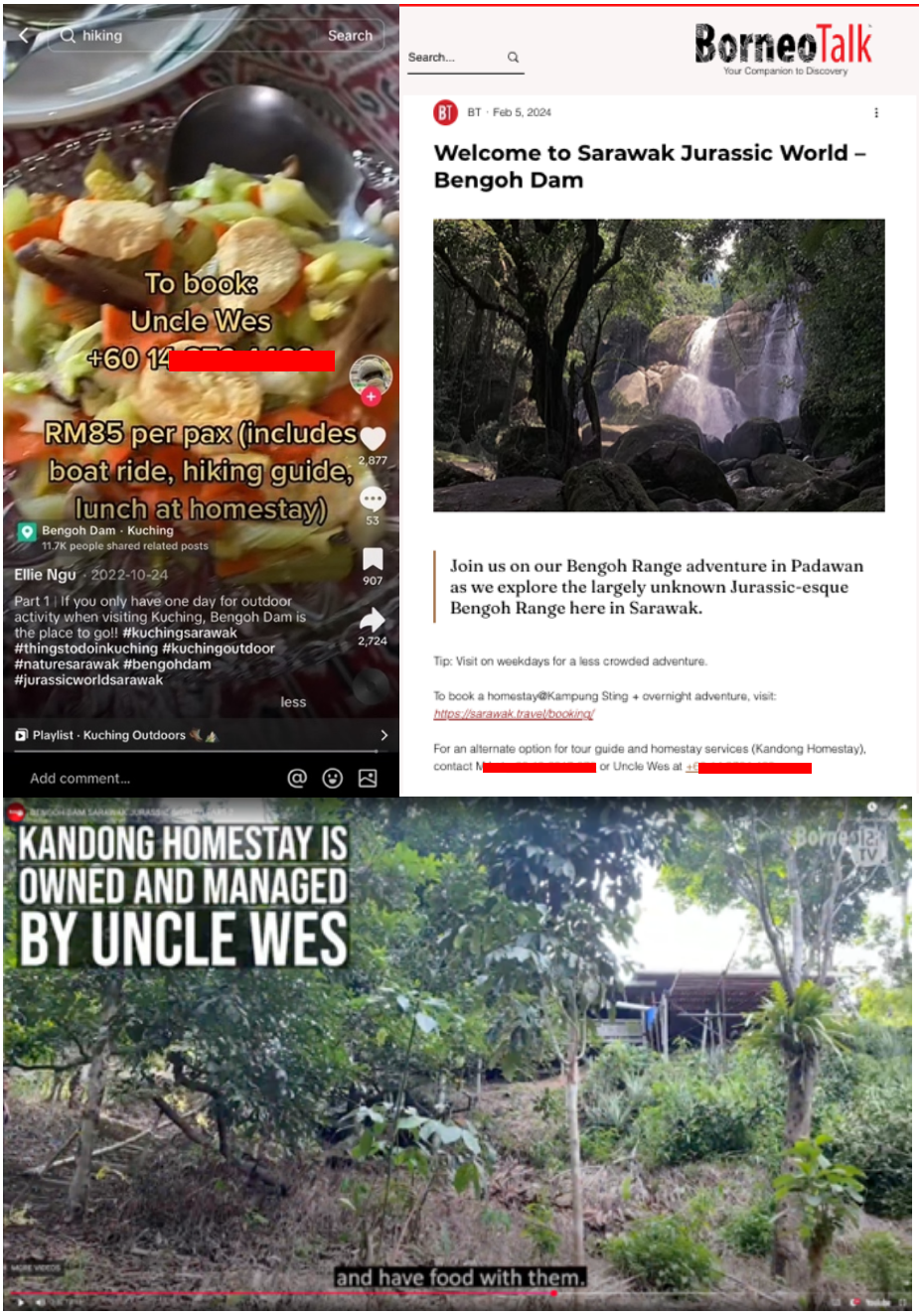


Figure 5.18 - (a) Personal mentions of RMEs name and contact (redacted in red) in a promotional video posted on YouTube by a past customer. (b) Past customers posting of their experiences on Tik Tok, with contact details of the RME shared. (c) Contact details of the RMEs shared on a blog post by a local reporter, who is also a past customer of the micro-enterprise.

Similarly, this is also observed in the cultural experience service that Winnie runs in Bawang Assan, Sibu, some 300 km away. Winnie, who also expressed keenness to market her services, shares her lack of time and know-how in creating digital marketing content. Instead, she receives an increasing number

of referrals through the video content made by her past customers, with her contact details shared (Figure 5.19).

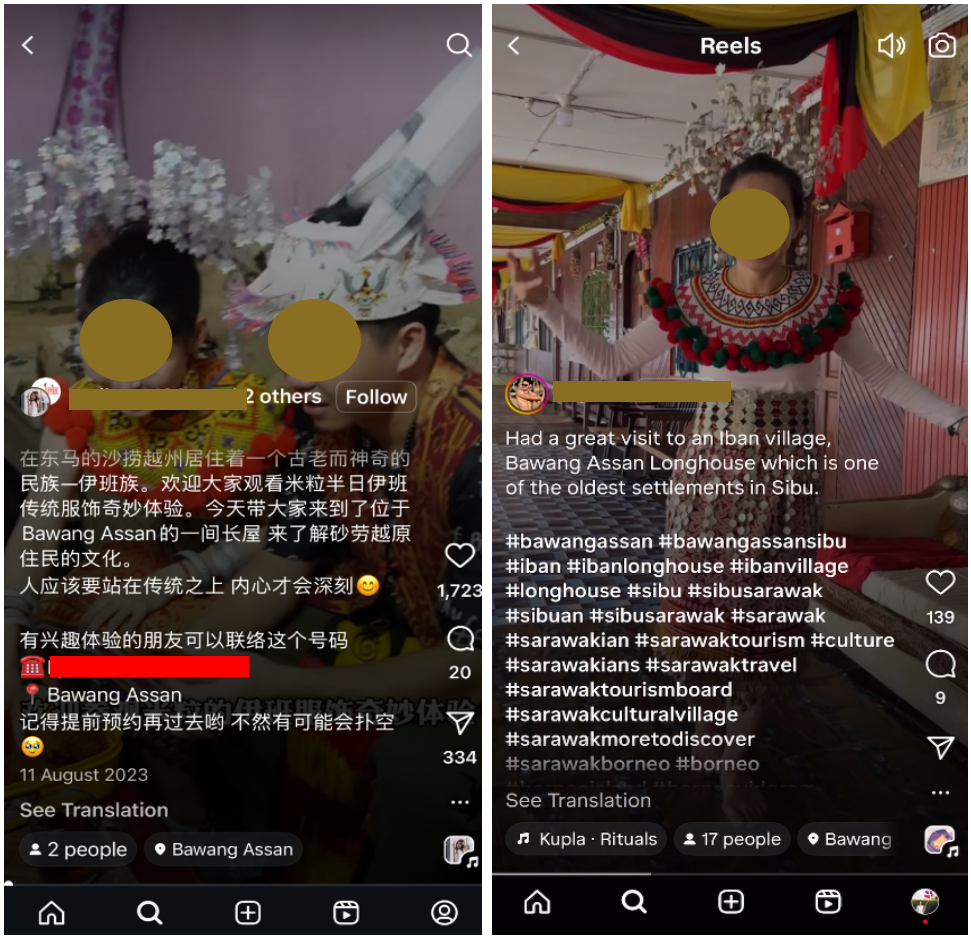


Figure 5.19 - (a) An Instagram user posting of the cultural experience in Bawang Assan, creating promotional content that markets Winnie's business and contact number (redacted in red). (b) Another customer's posting of their experiences on Instagram.

The marketing here, hence, builds on relationality that RMEs both rely on and are comfortable with, a local asset when contrasted with the deficit of digital marketing capabilities. This process creates a form of *solidarity marketing* that benefits their business through generation of marketing content with what may be seen as customer recommendation, while providing a sense of goodwill and reciprocity for their customers who generated them.

Moving from the reliance on word-of-mouth and personal network to generate marketing, we now turn to when RMEs themselves reappropriate digital tools to enact 'marketing' within their settings.

5.3.4 WhatsApp Re-Appropriation

A common practice found among the RMEs of this study is the re-appropriation of WhatsApp for 'marketing'. WhatsApp, a communication application owned by Meta, is a widely used communication application in Sarawak. Almost all the RMEs use WhatsApp regularly. Some incorporate the application more with their micro-enterprise, while some use it only for communication purposes. Although internet connectivity continues to be a challenge in many of the sites, rendering direct voice or video calls challenging, RMEs appropriate the application in a range of ways for marketing their products or businesses.

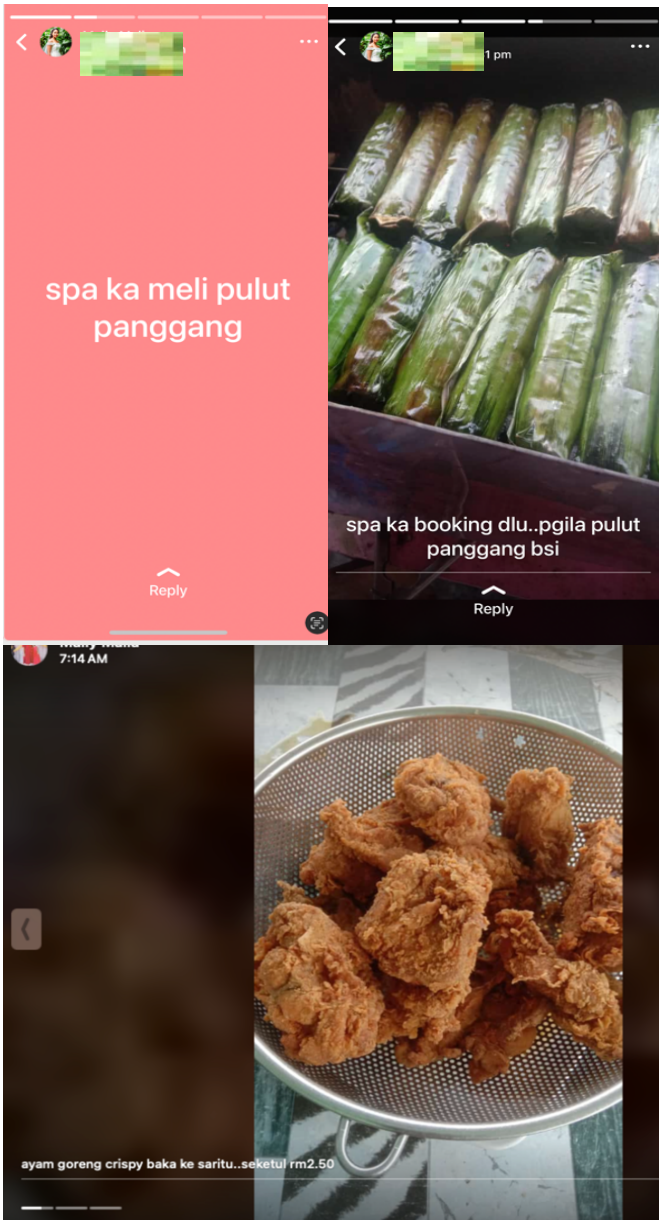
WhatsApp Updates

One of the most common tools for 'marketing' is the 24-hour WhatsApp *'Updates'*, interchangeably referred as *'Status'* (Figure 5.20). Sellers post casual updates— photos of their products, with short captions like "available today" or "first-come, first-serve" to share updates about their business. These posts were not algorithmically optimised, nor scheduled in advance. They were spontaneous and often informal. Customers who saw the update might reply directly to the seller or share it with someone else in their contacts.

> *Mary, a mother and RME from Bawang Assan juggles childcare with selling food items prepared from her home in a longhouse. She has set days in the week for food preparation, although those are fluid and changeable depending on her other commitments. She would then create a few posts on WhatsApp Status the day before, informing her contacts on the food items she will be selling and requesting pre-bookings. The next day when items are done, she would carry these food products and walk through the longhouse door-to-door, both*

selling them to whoever is interested, as well as those that have pre-booked.

As seen in the vignette above, Mary who sells food items in the village uses WhatsApp Status to share of her food products to her contacts, targeting villagers in Bawang Assan. Indeed there is a community WhatsApp Group in her longhouse with all residents in it, set up by the Longhouse Committee Members, which would be ideal for posting such posts, but felt it was inappropriate to do so. Setting up a separate WhatsApp group for commerce among the villagers was viewed as difficult, as she felt that special permission from the longhouse committee was needed. As a result, she was happy with



posting her products directly on her personal WhatsApp, which most villagers could view since they had each other's contacts.

Figure 5.20 - (a) Translation: 'Who wants to buy barbequed glutinous rice'. (b) 'Who wants, booking first…barbeques glutinous rice bsi ('best')'. (c) Crispy fried chicken, RM2.50 per piece.

Whatsapp Group

The use of *WhatsApp Groups* for marketing has been observed to be a routine practice among a few RMEs, particularly in Padawan, Bau and Long Semadoh. RMEs interact with these WhatsApp groups with slight variation across the different sites, but nonetheless are active users of the traditionally messaging application. A few practices emerged from the appropriation of WhatsApp groups for marketing.

The first is the use of WhatsApp groups essentially as 'mini-marketplaces'. RMEs utilised these social groups as avenues for promoting their business, whether that be a new home-made snack that is freshly prepared, or a new menu item in the local canteen. The content of the posts is usually casual, informal and engrained with a little humour. For example, Noel, based in Kampung Karu, Padawan, has been selling traditional home-made snacks from her home using digital tools like WhatsApp to reach customers. During the visit to her home, she generously shared her ways of selling. Pulling out her phone, Noel showed the different WhatsApp groups that she is part of, including church groups, local tourism groups and external event groups.

> *"In a week I would post almost daily. I am a top contributor in these groups."*

She recounted that there are a standard 12 WhatsApp groups where she regularly posts her product, alongside a list of Facebook Groups. She then points to one of her latest posts in a WhatsApp Group, posted that morning.

[Malay] *"Rempeyek sedappp, original resipi dibuat oleh lady jawa…cukup mantapp rasanya, boleh cuba… watsap sy utk order"*

[Translation] *'Delicious Rempeyek (a deep-fried savoury Indonesian Javanese cracker), original recipe, made by a Javanese lady. Really good taste. You may give it a try. To order, WhatsApp me'*

These casual posts contain a catchy rhyme that conveyed friendliness and approachability. They are also frequent, posting '*almost daily'* as a form of marketing to the audiences in these groups, some of which are also RMEs themselves, who would similarly post their businesses in the chat. Competition, hence, as described by Noel, is growing within these groups, and she expressed her need to seek other similar groups to promote in.



Figure 5.21 - (a) The list of WhatsApp Groups that the RME is part of, whereby she would post frequently to promote her products. (b) A typical post would consist of photos of her product, with a short message. (c) A list of Facebook Groups which the RME also make regular postings in promoting her business.

Aside from this, other appropriation practices included setting up 'new' WhatsApp groups for marketing a particular service or product. The setting up process includes a purposeful naming and uploading of a photo to the group, signalling the purpose of the group. The process is followed by the manual adding of personal contacts, and the contacts of contacts into the group. For example, Rose and Roshan who runs a touristic business alongside

their café, details their rationale around using WhatsApp Groups for marketing their services.

> *"We would name the group, say 'Pontianak, April 2023', and start adding our friends and family who may be interested. We would also ask them to add others that may be interested as well…When the attendees are finalised, we would keep those that are not going in the WhatsApp Group. We do this so that those that did not join this round, can see all the photos and videos of the trip that we post in the group, enticing them to join us for the next trip."*
>
> - Roshan, Café owner and tour operator, Bau.

The use of Whatsapp Groups as shown in the two examples above, demonstrates how RMEs re-appropriate digital technology in marketing their businesses. Through the extending of existing social practices of sharing information amongs social groups, RMEs capitalised existing technology that both RMEs and their customers are familiar with for marketing activities, and do so in a casual, less formal way of interaction (explore more in 5.4).

WhatsApp Business

Some RMEs spoke about using WhatsApp Status and Groups alongside *WhatsApp Business*, a separate version of the application that requires an additional download in addition to the regular WhatsApp. Those who set it up, such as Belinda from the vignette below, described how it allows them to create a business profile, where they list opening times, location, or links to their social media. They application allowed them to put together a business catalogue with product photos, terms and conditions, and even auto-replies and check-out carts features. The use of WhatsApp Business is illustrated through the vignette below of Belinda (mentioned in Section 5.1.2):

> *Belinda who runs a 'café' in the village out of the longhouse porch, would posts a WhatsApp Status each morning announcing that the café is now open. This is followed by a range of photos that details her menu, along with any special promotion for the day. She faithfully repeats this everyday manually, posting on the app that is viewable only by those that have her contact. A couple of hours later, orders begin to roll in in the form of WhatsApp text, with the specified item and desired time of delivery or pick-up. At the café, Belinda manages orders on a laptop (Figure 5.23). Most of the customers are villagers,*

> *community members, the local pastor, and people that she knew. The food orders would then be prepared in the kitchen, with the help of a hired worker. The café seldom has customers eating in-store. However, WhatsApp orders are active.*
>
> *- Fieldnotes, Bawang Assan, 2023*

Belinda recounts learning the use of WhatsApp as a tool for business through from a friend. The Business-version, which is less adopted among RMEs, allows her to build a catalogue of menu items that allows customers to order specific item. When these items are pressed, would deliver as a text message to Belinda. The 'Reply' button seen on the bottom of the Updates (Figure 5.22) serves as what is commonly referred to in marketing language as 'call-to-action'. These post invites the audience, often friends and families, if not acquaintances, that are within one's mobile contact, to initiate a conversation.

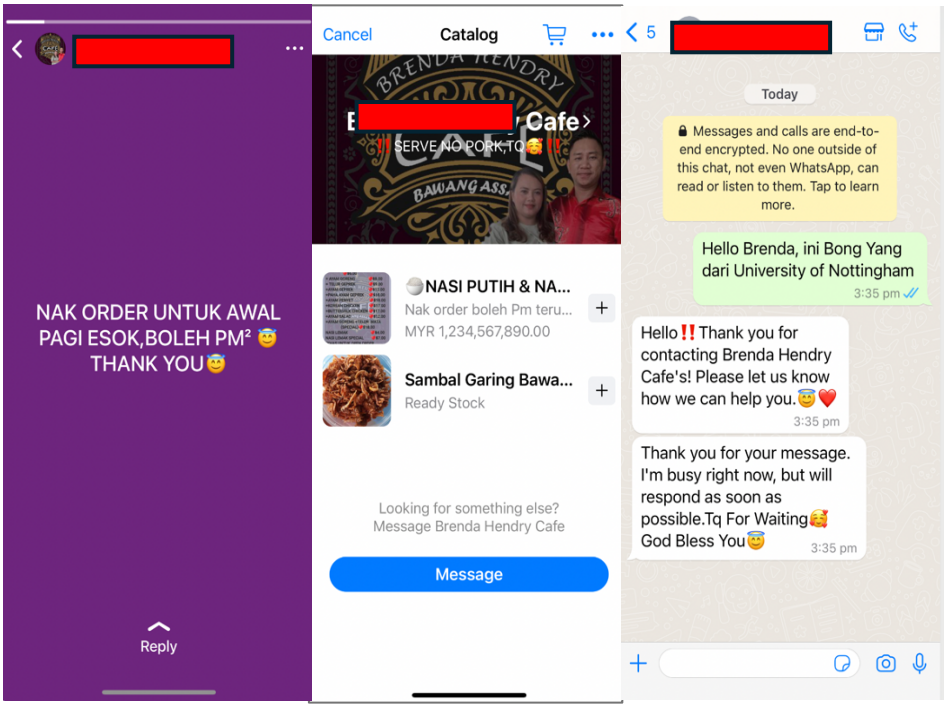


Figure 5.22 - (a) A typical WhatsApp status posting from Belinda. Translation: *'If you want to order for tomorrow early morning, you may PM (Private Message). Thank you'*. (b) The use of WhatsApp Business in the creation of a catalogue, enabling customers to view products, specify quantities, and communicate with the seller via 'Message'. The price of 'Nasi Putih' ('White Rice') is listed as MYR 1,234,567,890.00, illustrating the playfulness and informality of the RME. (c) Auto-reply function available to WhatsApp Business users, which allows users to automate standard replies to enquiries.

Section Summary

Through the *marketing* coat hanger, the everyday ways RMEs made their businesses visible is being observed. From being consistently present at a stall, to calling out to passers-by with spontaneous market cries, or drawing on customers to create marketing content, to the posting of informal WhatsApp Status updates, these practices were regarded not as formal strategies but as part of situated actions carried out through personable and personable relationships. In their accounts, marketing was integrated into their daily community life and expressed through personality and care as well as through products and prices.

If marketing were about making products and sellers visible, the next coat hanger turns to how these ties are built in situ and sustained. Here, the ways in which RMEs organise their customer interactions are being described— through personal networks, face-to-face exchanges, direct calls or text, and the casual tones of kinship and familiarity— offering a grounded perspective of how customer relationships are 'managed' in rural Sarawak.

5.4 CUSTOMER RELATIONSHIP MANAGEMENT

Customer relationship management (CRM) is often treated as an important component of modern businesses. In formal business operations, CRM typically refers to the systematic organising of customers' data, often with digital technologies and database, for the purpose of understanding, segmenting and engaging customers in ways that maximise revenue generation (Guerola-Navarro et al., 2024).

In rural Sarawak, customer relationships are rarely understood or practised from the perspective of 'management', if that implies a coordinated and data-driven effort that seeks to efficiently organise customer interactions for revenue generation (Handriana, 2016; Matraeva, 2022). Instead, relationships are observed to be often rooted in personal networks and are sustained through relational practices. Such practices include knowing customers personally, preference for in-person or direct contact, and interacting with

buyers in casual and familiar tones. In what follows, how CRM is enacted in rural Sarawak is explored through the everyday practices of RMEs.

5.4.1 Personal Network

RMEs in the various rural settings often know their customers personally, often being their own community members, friends, relatives or people that they interact with frequently. As seen through the vignette below, Jessica from Long Semadoh shares how she knows each of her customers and what they typically buy from her convenient store.

> *"I know all of them very well. They're all from this village… so I know who's who, who from the family would frequent my shop. I know what they usually buy and don't buy. I don't need to push them to buy anything… Some will send their younger children, some will come themselves, and some will text me on WhatsApp, when the internet is working off course. "*

For Jessica, the possession of a personal grasp on who her customers are, and their typical orders was not framed as a means to push more sales, but as part of everyday familiarity and intimacy with the community. Customers' preferences and routines were recognised as matters of better meeting their needs, rather than something to be monitored and monetised.

Having customers within their personal networks also shaped how RMEs used digital tools. For example, Jessica explained that she would post an update on WhatsApp on the rare occasions when her shop is closed or when she is travelling. Such updates were visible only to those who already had her number.

> *"When I am away, I will put up an announcement on my WhatsApp Updates, so people know the shop is not open."*

Having customers as part of RME's personal network has also allowed for interesting ways of interacting between RMEs and their customers. An example of this is '*Cash on Delivery'* or '*COD*' as locally referred, a common practice across Sarawak's rural sites. Typically, a customer would message

the RMEs directly through WhatsApp to request a product or service, most commonly food. The seller would deliver the order to the customer's designated location, and payment is made in cash on receipt. No deposits were requested in advance. Two food RMEs in Bau explained:

> *Rose: "We'll promote our business on WhatsApp Status (Updates), and that we can do 'COD'.*
>
> *Jenni: "For example, if they buy five packs and request COD in Bau, we'll add an additional RM5 (for delivery).."*
>
> *Rose: "Yes, we'll use our personal WhatsApp… It's very straightforward."*

Here, Rose and Jenni contrast COD with platform services, presenting COD as 'straightforward' and cheaper for customers, who often are members of their community. Their remarks display how delivery, payment and promotion are organised within personal networks, without relying on third-party platforms. In Belinda's case, in Bawang Assan, where she personally coordinates orders and delivery to her buyers, who are fellow villagers in Bawang Assan, as seen in an excerpt of the fieldnote below:

> *Delivery for Belinda's business is casual and informal. She would usually deliver the orders herself using her motorcycle, often with her young child onboard, and sometimes in between school pick-up and drop-off. The distance of delivery is well within the vicinity of the village, nothing beyond a 10-minute ride. The prices of the café are considered 'high', but portions are generous. Due to being the only 'café' in the village, villagers appreciate the 'service' of both getting town-standard food, as well as the convenience of 'online delivery'.*





with cash-on-delivery (COD) as the main mode of payment.
Fieldnotes, Bawang Assan, 2023

Figure 5.23 – (a) Belinda receives delivery orders from the community through Whatsapp messaging, of which she would deliver the orders herself. (b) Belinda delivering food parcel orders to customers, with her child.

As demonstrated through the two vignettes, the RMEs are accustomed to maintaining personal relationships with their customers, often sharing one another's personal WhatsApp contacts, upon which transactions are built. WhatsApp appears to be the primary customer management tool through which RMEs communicate and handle customer orders, while in-person transactions remained a common description when discussing customer dealings. The latter is examined more closely in the next section.

5.4.2 In-person and direct customer engagement

Through the different sites of the study, RMEs repeatedly described a preference for engaging customers either in-person or through direct communication, rather than through platforms, third parties or other intermediaries. 'Face-to-face' interactions were appreciated for allowing personable exchanges and their ability to 'resolve issues' more easily.

> *In a typical engagement with a buyer in the weekend market, Michael would speak colloquially with the interested customer, enquiring of her day, her family, and any local news. This is followed by discussing a rural product, through a combination of voice, touch, smell, sight and taste, depending on the product, as a means to demonstrate buyability.*
>
> *The buyer may then mimic this series of motions in an effort to cross-check what is demonstrated. When a transaction is finally agreed, care is shown in packaging the product. The payment is made with paper cash or metal coins, physically through one another's hands, often with change returned.*
>
> *- Fieldnotes from Sibu, 2023*

As seen above, the in-person customer interaction that RMEs like Michael is accustomed with, involves a range of modalities that includes sight, sound, touch, smell and taste. These local interactional practices are part of how

transactions are initiated, negotiated and completed, all done in physical proximity with the customer. He further expressed the below:

> *"How do we attract the attention of customers so that they would buy from us is, we have to 'throw' a smile or speak to them. That's one of the ways to attract their interest in buying our product".* – Michael, Bawang Assan

From this vignette, we see how the importance is placed on interacting directly with potential customers, involving not just speech or voice (as per Section 5.1), but also affective expressions, conversations and physical interaction of exchanges, seen in the figure below:



Figure 5.24 – Michael interacting with customers at the Tamu. As described by himself, he would gain customers' interest by smiling at them and initiating a conversation, followed by demonstrating products, packaging goods, and physically exchanging goods and cash.

In addition to their leaning towards 'face-to-face' interactions, RMEs have also consistently expressed a preference for direct communication with customers, whether in-person or through digital channels. As Rose, explained:

> *"Many of my customers would text or call me to ask if I would be at the stall today, or if this particular dish is available today…The ability to communicate directly through calls or texts makes it easier, for customers to reach me, and for us to resolve any issues."*
>
> - Rose, rural café owner, Bau

For Rose and others, direct communication made it possible for customers to check not only on product availability, but also whether the seller would personally be present at the stall. The immediacy of these interactions was also described as making it 'easier' for both parties to sort things out together. In this way, direct communication works as a form of coordination, allowing both parties to confirm what could be expected of them and when. In the next section, we turn to the content and format of these direct communications, in understanding how RMEs interact with customers.

5.4.3 Informality and casualness in interaction

In conversations that were not in-person, RMEs often interacted with customers that resembled everyday exchanges between friends or kin. Even with strangers, the interactions give impressions of familiarity. This was especially evident in digital interactions, where sellers used short-form expressions, familial terms, and the informality of code-switching between English and Malay.

For example, Winnie from Bawang Assan opened a WhatsApp exchange with:

> *S1: "is this you sis?" (message to a buyer who had left their phone number on their social media post)*
>
> *S2: "Yes I left a comment on your Tik Tok video, can I order one of those please sis?"*

Interactions between sellers and buyers would also seamlessly move across multiple platforms depending on the progress of the discussion and negotiation. As demonstrated by Winnie through the figure below, a conversation could begin from obtaining contact number from a comment below a Tik Tok video to adding one another on Facebook to chat on

Messenger and then progress onto WhatsApp for finalising the transaction and wiring payments.



Figure 5.25 - Winnie explaining how a customer contacted her via Messenger which later moved onto WhatsApp.

Observed in the conversation, the buyer-seller relationship has an interesting framing, one that uses familial terms like 'sister' or 'sis' in short, that views one another beyond the mere transactional. The address term treats the other as someone familiar, softening the encounter and making it more informal instead of a formal commercial negotiation.

A similar informality was evident in another exchange:

Malay	**English**
Buyer [6:00pm] Saya mahu maruku dan kerepek Pisang original	*Buyer [6:00pm]* *I want Muruku and Banana Chips* *original (flavour)*
Seller [6:02pm] Boleh sis… Berapa bungkus? Bila km mahu?	*Seller [6:02pm]* *Sure sister…* *How many bags?* *When do you want them?*
Buyer [6:05pm] Maruku-4 bungkus Kerepek pisang 1 kg.	*Buyer [6:05pm]* *Maruku – 4 bags* *Banana Chips 1 kg*
Buyer [6:05pm]	*Buyer [6:05pm]*

Sebelum 16.12.23 dptkah	*Before 16th December 2023, is that alright?*
Seller [6:07pm] Ok	*Seller [6:07pm]* *OK*
Seller [6:07pm] Sy berusha…tq sis	*Seller [6:07pm]* *I will try my best…Tq sister*

Table 5.2 – WhatsApp exchange between an RME with a buyer.

This interaction shows how requests and confirmations are interlaced with terms of address ('sister') and casualness ('I will try my best'), giving the exchange a cooperative and informal tone. A mix of English and Malay is utilised (exp: 14 pieces RM6), alongside short forms (exp: tq, sis, km, sy etc.) and conversational tone (exp: you should give it a try), making the ordering process feel like a familiar conversation.

Section Summary

In summary, CRM in rural Sarawak is enacted through personal networks, direct communication and everyday informality. RMEs actively sustain customer ties through practices that are personable, flexible and low-cost, while avoiding mediatory fees, impersonal exchanges and platform dependence associated with formal platforms. By contrast, conventional DM platforms largely mediate communication through interfaces, leaving limited opportunities for the kind of checking, presence and coordination that RMEs emphasised as important in their day-to-day commerce. In this way, CRM in rural Sarawak is not just a set of technical systems but an ongoing set of situated interactions that are grounded in local relationships, presence and recognition.

In the next coat hanger, we turn to 'digital transformation', a key term in development policies (as demonstrated in Chapter 2.2), often presented as a singular and inevitable trajectory for RMEs. In this section, how RMEs approach digital technologies in practice is described, including their perceptions of these technologies, and their daily engagement or absence

thereof, situating within the context of 'digital transformation' narrative prevalent in mainstream discourse.

5.5 DIGITAL TRANSFORMATION

Digital transformation is broadly understood as the integration of digital technologies that reshape business models, value creation processes, and industry structures (World Economic Forum, 2020). In business literature and research, there is a common assumption that digital technologies can provide a transformational impact on enterprises. Technologies such as DMs, cloud services, Internet of Things (IoT) and large language models (LLM's) are seen as transformative technologies for enterprises (Marolt et al., 2024; OECD, 2021). In the World Bank report, it is estimated that MSME's has a potential of increasing revenue through the potential of what is termed digital transformation (Petropoulou et al., 2024; Rita et al., 2024).

Especially in a post-COVID19 business environment, enterprises are increasingly expected to have sophisticated digital capabilities both as an adaptive and survival mechanism (Klein & Todesco, 2021). The promise of digitalisation of business processes, operations and sales is that this changes can significantly improve business activities, efficiency and minimise cost, through automation, streamlining and outsourcing. This in turn would result in increasing profitability (OECD, 2021).

This rhetoric is common in many developing countries, and Sarawak is no different. Under the wider policy motivation to digitalise the economy, the Sarawak government has rolled out ambitious initiatives and target goals of transforming the economy to the digital, targeting especially smaller businesses in providing incubators and grants to develop digital capabilities amount enterprises (shown in Chapter 4.2).

We side-step from this mainstream reading of digital transformation in this section, and dive into the realities of rural entrepreneurship in Sarawak, to observe how digital technology[9], particularly DM platforms are perceived,

[9] Digital technology here is use broadly in order to allow observations to be flexible and grounded to the data. With that said, the study remains interested, broadly in the perception,

engaged and appropriated by micro-entrepreneurs within their micro-enterprises.

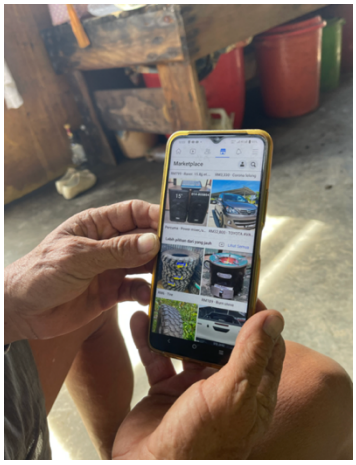
5.5.1 Minimal digital engagement for commerce

Despite the prominence of digitalisation on the policy agenda along with the mainstream rhetoric for businesses to adopt digital technology, the ethnographic findings among micro-entrepreneurs in rural Sarawak uncovers a different reality. Majority of the micro-enterprises across five rural sites of this study do not engage with digital technologies outside the use of communication applications. A minority of the participants have a Facebook page for their business, while a handful are listed on Google Maps. Even so, most of them do not actively manage these digital platforms.

In regard to conventional DM platforms such as *Shopee* and *Lazada*, four RMEs have engaged with them. Two of them however have since stopped using while one is considering stopping. We see hence overall a low amount of digital technology engagement among RMEs in Sarawak.

All RMEs however, do own a smart mobile phone, and are comfortable using communication apps such as WhatsApp for voice messaging and video call. The use of digital platforms for selling however is not a common practice despite an increasing use of such platforms for browsing and entertainment.





use and appropriation of DM platforms as a form of technology within micro-enterprises in Sarawak.

Figure 5.26 - An RME in Ba'kelalan, who does not use Facebook Marketplace for selling nor buying, is browsing through the marketplace feature while waiting for the salt extraction process to complete.

5.5.2 Emotional fears towards digital marketplaces

> *"I feel afraid ('takut'). Afraid to even try using it."*
>
> – Nonda, Bawang Assan

The word *'takut'* ('fear' or 'afraid') reoccurs repeatedly through the study when participants describe their relationship with digital technology. The Malay word 'takut', although directly translatable as the emotion of fear or being afraid, is nuanced in its meaning when used in relation to RMEs perception towards digital technology.

As captured in the quote above, the sentiment is shared among many of the participants when asked about their engagement with digital marketplace platforms. RMEs expressed their 'fear' towards using technology, not referring to a fearful unpleasantness that leads to avoidance, but more so an introspective response in regard to their own positionalities and capabilities.

Sometimes they attribute this fear to being a 'orang kampung' ('rural person'), compared to 'orang bandar' ('urban people'). This can be inferred as their reference to the more typical manual vocations of rural communities, which requires less digital technology use, as well as the overall digital infrastructure availability in rural regions compared to their urban counterparts.

> *"We're rural people, right? How would we be good at using digital technology?"* - Renee, Padawan

In other instances, RMEs quotes their lack of digital familiarity or literacy capabilities, as to the reason for their 'fear' of using digital marketplaces.

> *"I am not able to use this, because I am not able to read, that's why I can't use all these 'digital' things. Don't they use written words on them?"* – Nonda, Bawang Assan

> *"If you ask me to sell my products at the market, I am good at it. But if you ask me sell online, I really don't know how"*
>
> – James, Bawang Assan

As seen described by Nonda above, the emotion of fear is further exacerbated when RMEs reflect upon their illiteracy. These emotions of fear expressed however, are not ones that lead towards rejection of technology. Many among them uses the phrase '*not yet'* instead of more rejective words when asked whether they use platform technologies in their business.

Fear towards DM use is also expressed in the context of making a mistake. "*I fear pressing the wrong thing*" is commonly shared concern. The consequence of 'pressing the wrong thing' are linked to financial loss, or the possibility of inviting bad actors that would run a 'scam' on them, an increasingly common experience among rural communities when engaging online purchases. Simultaneously, 'pressing the wrong thing' would also lead to embarrassment, especially when the mistake is one that others on social media could observed.

Asides from that, the word '*takut*' is also used in the form of avoiding 'losing control'. Asked why he does not use digital payments, especially the state promoted payment application *Sarawak Pay*, Mohammad, a RME in Bawang Assan shares that he fears the use of this technology would cause him and his family to lose 'control' on spending. The electronic payment system, *Sarawak Pay*, which facilitates consumer purchases as well as enterprise receipts of payments are widely adopted in urban cities, but rarely used among RMEs. According to Mohammad:

> *"We prefer to receive and spend in cash, as we can hold, feel and see the cash money, and ascertain how much we spend (and receive)."*
>
> *- Mohammad, Bawang Assan*

Lastly, '*takut*' also appear among RMEs that has indeed had bad experiences with technology, such as losing ownership of digital assets in the case of Melinda from Padawan. Due to her business Facebook page being 'taken away' from a relative (Section 5.2), and not knowing the right avenues or the local etiquettes to take action, she expressed the following:

> "*'I'm so scared now. Due to the issue with customer fighting via the taking over of the Facebook account*."
>
> - Melinda*, Padawan*

Through the observations described above, it is understood that there is an emotional sentiment towards DM that RMEs shared. One that is associated with fear due to a lack in capabilities, identity, maintaining control and from bad experience. Despite this perceived 'negative' emotion, RMEs do express a general interest in learning to appropriate these technologies.

5.5.3 General Interest to Learn

Although 'digital transformation' is not commonly observed among RMEs in Sarawak, with most sharing sentiments of fear and unfamiliarity with digital technologies, there is an observable interest to learn to appropriate these platforms. "*If someone would teach us'*, is a common expression, resonating throughout multiple sites. This indicates that the 'fears' that RMEs mentioned are not one that is wholly rooted in resistance, but a perceived lack of confidence and support. It reflects an acknowledgment of their limitations, coupled with a willingness to engage, should the right conditions for learning and accompaniment be in place.

Ironically, in many of these villages, there are government-funded digital training centres called 'PEDi' or *Pusat Economy Digital* ('Digital Economy Centre') which aims to train micro-entrepreneurs with digital skills. These training centres and initiatives are almost entirely not accessed by local RMEs of this study. Reasons behind not accessing, is expressed by Michael who is also from the same community as Nonda and James.

> *"No, we don't think these trainings are for us. We're just small sellers aren't we? It's not like we have a large farm or livestock, such as those that have 100's of hectares of plantation."*
>
> *– Michael, Bawang Assan*

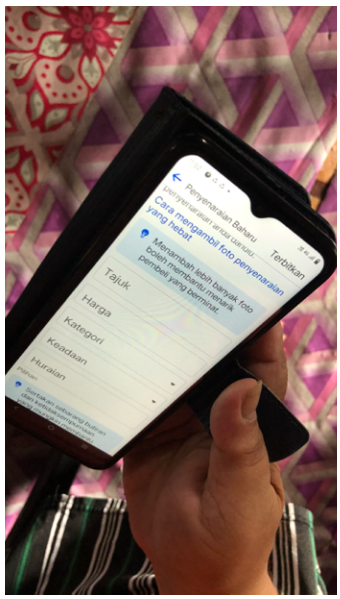
In this study however, the 'fear' towards digital technologies is observed to be minimised, when exposure and familiarity of the technology is facilitated through a trusted community. This was the case both for Nonda as well as a

group of RMEs in Bawang Assan, whom attended a digital workshop as part of the study (Chapter 6.2.2)

After a full-day workshop exploring different ways to sell products online, the group of RMEs, both man and woman, shared that learning about these platforms alongside their peers, in a setting that felt familiar and supportive, helped ease their initial discomfort. The co-learning environment fostered greater awareness and allowed them to engage more confidently with digital tools that were previously unfamiliar.

"I realised that I don't fear it anymore!", a woman RME in her 50's shouted at the end of the workshop (further discussed in Chapter 6). A similar response was observed through a mock application walkthrough with Nonda (who did not attend the workshop due to childcare responsibilities). In attempting to list a product on Facebook Marketplace, Nonda struggled to moved past listing requirements that does not have any iconography illustrating what the interface was expecting of the user. With the 'reimagined' marketplace platform with read-out-loud function enacted by the researcher [10] (which Nonda indicated that she would like), she





[10] In view of the technological limitations of the interface given the literacy level of the participant, the researcher conducted the product listing walkthrough on Facebook Marketplace by reading-out-loud available text on the interface, in reimagining with the participant a feature that would read wordings on the interface for illiterate users. The researcher attempted to be as objective as possible in the process, by not providing much guidance aside from the reading of text, to observe how the user would interact with the existing marketplace platform had reading literacy was not a problem.

communicated keenness in learning to use the marketplace platform for her future products.

Figure 5.27- (a) A walkthrough study of RME listing a product on a DM. RME is taking a photo using her mobile phone camera, one of the first steps in the listing process on Facebook Marketplace. (b) The lack of iconography in the listing process became a hindrance for Nonda, who is illiterate, in successfully accomplishing the tasks. As a workaround, the study imagined that there were 'read-out-loud' or 'voice-to-text' features, through the aid of the researcher.

5.5.4 Resistance towards digital marketplace platforms

Aside from RMEs that have not engaged with DM platforms described above, we see a diverse response among those that have engaged with these platforms. In Bau, where DM platforms such as food delivery services have an official presence observed through promotional posters and evidence of active promotion, participants have conveyed negative experiences with their use of these platforms.

> *"I will be closing my Food Panda platform. Many in the food court are closing their account too. I find that their payments are sometimes late or inaccurate… They would also constantly request for running promotion on my products, cutting into my margins…which I do not appreciate."*
>
> *- Jenni, Food RME, Bau*

> *"Nobody picks up when I call them to enquire about payments, which have been late for the past month."*
>
> *- Cammy, Food RME, Bau*

As seen in the vignettes above, RMEs that have adopted these platforms are either considering or have already decided to stop further engagement, citing inaccurate payments or non-consensual discounts that impact RME's revenue.

The bad experiences of fellow RMEs with DM platforms put off others within the community from engaging. Instead, they express preferences for organising their own digital delivery system through the 'Cash on Delivery' (COD) practice. Following the conversation between Rose and Jenni in 5.4.1,

they reasoned how COD is 'better', saving the customers of platform fees while keeping the same selling prices that they desire.

> *Rose: "Yes it is very straightforward (referring to COD)…Why do we need to use Food Panda or Grab?"*
>
> *Jenni: "I have decided to stop using them for two months, and business is still ok, just the same. In Bau, people know that there are charges that are expensive (for using platforms to order food).*
>
> *Rose: "They (the platforms) charge the customer an additional fee, and on top of that they reduce our selling price too…so, COD is better."*

In the next village, 24 km away in Padawan, food delivery DM platforms are less prevalent due to its rurality. RMEs in this region, however, are still able to engage with general DM platforms to sell their rural products. Nathan for example, has been attempting to do so over the course of a year has eventually given up on pursuing this form of micro-entrepreneurship. According to him platform selling is either 'too competitive' or 'too expensive', with the latter referring to the various platform fees and taxes for each transaction. The long distance to nearby postal services for posting of goods also incurs additional logistical costs on top of platform charges.

> *"For Lazada, they require sellers to list at least 10 items to have an active account. I am a micro-entrepreneur… How do they expect me to have so many ready-made products? For Shopee, there are so many taxes, seriously… In the end I just try to sell on Facebook Marketplace because it is free"*
>
> - Nathan, RME of rural products, Padawan

Others in the same region have also similarly expressed their resorting to more generic platforms like Facebook, with the use of WhatsApp as a means of utilising digital tools for commerce.

> *"I have not found confidence to use Shopee…I find Facebook much easier… maybe because there have less procedure… Grab (a food delivery platform) has reached out to me to join them, but I am hesitant about joining due to the platform fees."*
>
> - Noel, RME of rural products, Padawan

In more remote communities, mainstream platforms are generally out of consideration or outright resisted. Though RMEs are aware of these platforms, such as *Airbnb* or *Agoda* for accommodation. Liban in Ba'kelalan, was interested in attempting to set up an *Airbnb* account under the support of the researcher, but resorted to *Facebook Page* eventually as it provides more flexibility for tailoring his homestay and eco-tourism business; Simon from Lond Semadoh on the other hand, resisted mainstream platforms as they are cater solely for accommodation and are designed for 'mass tourism', citing his desire to welcome visitors who 'genuinely have an interest' to their local culture and customs.

> *"We want (visiting) Long Semadoh to be a more personalised experience… we don't want… mass tourism. We want to control the impact of this place, and we want it to be as a sustainable ecotourism… We are in a very, very sensitive environment where everything is still pristine. We're still holding on our (religious) belief… we (are) still practicing the things that we've been practicing for many years…. We don't want this thing to be messed up."*
>
> - Simon, café owner and tourism advocate, Long Semadoh

Section Summary

As policy and business narratives continue to depict digital transformation as essential and universal for business growth, accounts from RMEs in Sarawak reveal a more complex digital reality. Even when all RME participants have smartphones and are reasonably comfortable using social media and WhatsApp for communication and entertainment, few adopted DM platforms for commerce. Participants spoke of *takut* ('afraid') in approaching platforms, whether that be pressing the wrong button, making mistakes that might lead to embarrassment, being scammed or losing control over spending. Some had abandoned platforms after negative experiences with high fees, payment issues, logistical burdens and an overall lack of support.

Despite the minimal engagement, many expressed an interest in learning, 'if someone would teach us', and showed greater confidence when training was offered in a trusted, relational and community-based setting. Others adapted

familiar tools, such as WhatsApp and Facebook to manage orders, run promotions, and coordinate delivery, favouring COD practices to circumvent platform fees while maintaining local relationships. Still others resisted conventional platforms entirely, prioritising the protection of local culture and values rather than potential platform effects. In summary, rather than a seeing platform adoption as a linear trajectory as do many technology adoption models assumes, digital transformation in these contexts emerges as situated processes of negotiation, resistance and appropriation, complicated and shaped by local practices, rural capacities and local values. This warrants policymakers and platform executives alike to reflect on existing technology transfer strategies and assumptions, further discussed in Chapter 8.

5.6 CHAPTER SUMMARY

This chapter has explored how rural entrepreneurship looks like in Sarawak. Drawing from ethnographic accounts of 24 RMEs across five sites in Sarawak, the work practices, rationalities and daily interactions of RMEs were organised around a set of coat hangers. Rather than using these as fixed categories, they were intentionally used as provocative hooks for re-specifying how RMEs themselves organise and describe their work and interactions with digital technologies and DMs.

> The *micro-entrepreneur* emerged as one that weaves multiple roles together, sustaining livelihoods and juggling available opportunities while moving fluidly between roles, activities and family needs.
>
> The *business model* was less about profit models and cost analysis, but more about moral and cultural arrangements surrounding religious ideas of *berkat* (providence) and *rezeki* (provision), alongside community values of fairness and collective decision-making. These local 'models' renders business inseparable from cultural, spiritual and community life.

Marketing was enacted through presence, proximity and everyday interaction, like waiting at stalls, singing in markets, curating products and posting casual WhatsApp updates. These practices highlight the various modalities of engagement and inter-personal dynamics, rather than strategic brand positioning and campaigns.

Customer relationship management was unfolded through knowing customers personally, COD practices, and casual, familiar forms of interaction that are conducted not through CRM systems but through availability and responsiveness.

Finally, *digital transformation* in rural Sarawak was less linear than how policy discourse often suggests. It appeared as a complex mix of hesitation, *takut* (fear), curiosity and selective appropriation. Some RMEs experimented with digital tools in creative ways, while others resisted or rejected platforms that compromised their practices and values.

Taken together, these observations complicate formal understanding of entrepreneurship among rural and micro-entrepreneurs in Sarawak. This chapter highlights how micro-entrepreneurship is an ongoing negotiation between economic needs, social ties, situated practices and local values. The implications of these empirical findings in relation to rural entrepreneurship, DM platforms, and the support initiatives surrounding RMEs are discussed further in Chapter 8.1.

Having established the importance of grounding our understanding and knowledge of rural micro-entrepreneurship in the everyday, situated practices of RMEs, the next chapter explores how these local understandings, practices and values can meaningfully inform the design of DM platforms. Through *participatory design* with the RMEs from this chapter along with their community, it considers what it means to co-imagine and co-design alternative DM futures that are more contextually situated and locally relevant.

6

REIMAGINING DIGITAL MARKETPLACE PLATFORMS WITH MICRO-ENTREPRENEURS

The preceding chapter examined how micro-entrepreneurship is enacted in rural Sarawak and revealed the epistemological and practical gaps between local entrepreneurial realities and the formalist logics embedded in dominant platform designs. As discussed in Chapter 2, dominant digital marketplace (DM) platforms typically emerge from WEIRD context, embedding notions of efficiency, individual agency and universalised design that foregrounds a certain ontological logic often at odds with the settings into which they are introduced (Irani et al., 2010).

Like many other digital technologies, DM platforms tend to privilege the worldviews of their designers and original intended users (Hardy et al., 2020). The proliferation of DM platforms in the developing world has been seen to neglect local user needs, lack sufficient adaptability to local context and sensitivities, and marginalises local culture that do not align with WEIRD paradigms (Hobbis and Hobbis, 2023; Bong et al., 2025). This misalignment is not merely a matter of better usability and interface improvements but reflects a deeper disconnect in how entrepreneurship itself is conceived and who counts as an entrepreneur. Addressing this gap requires the reimagining

of DM design from the standpoint of RMEs themselves, an endeavour this chapter aims to examine through participatory design (PD) approaches[11].

This chapter first outlines the theoretical framing of these workshops along the cultural engagement continuum. It then details each workshop's rationale, design, and outputs, before presenting the collective findings. In doing so, the chapter addresses the following research question: '*How can digital marketplace platforms be reimagined with rural micro-entrepreneurs to more effectively reflect, and support locally situated economic and social practices?*'.

The study's objectives include:

- Exploring the everyday economic, interactional and digital practices that RMEs draw on to conduct commerce in their local contexts.
- Examining how existing digital marketplaces align with or diverge from locally embedded practices, and what are the consequences of those (mis)alignments for RMEs?
- Exploring how participatory design approaches can be employed to co-produce alternative, context-sensitive digital marketplace platforms with RMEs?

The findings of this chapter underline the unintended consequences of transferring standardised digital platforms into rural contexts and the imperative for alternative design approaches that more fully integrate the social dimensions of real-world marketplaces. The work contributes to PD through the operationalising of the *cultural engagement approaches*. Using this framework, the study engages with RMEs through the different approaches in arriving at design implications for DM platforms.

[11] This chapter has primarily drawn upon the research article titled *'Can My Voice Be Heard?' Taking non-WEIRD voices seriously in digital marketplaces* (Bong et al., 2025), published at the Conference on Computing and Sustainable Societies (COMPASS) 2025 in Toronto, Canada.

6.1 PARTICIPATORY DESIGN THROUGH A CULTURAL ENGAGEMENT APPROACH

This study adopted PD as both the methodological and ethical orientation. Taking an exploratory approach to reimagine DM platforms with RMEs, the four workshops were designed across four sites. The design of these four workshops drew from Winschiers-Theophilus et al. (2019)'s *cultural engagement approaches* (2019) in community technology design (as elaborated in Chapter 3.2.2), combined with the '*futuring'* methods of Muashakele et al. (2023a). The cultural engagement approaches categorise community technology development approaches into *cross-, inter-, multi-* and *trans-cultural* (Table 6.1), each approaching technology development projects with different researcher positionalities, design paradigms and community narratives.

This study proposed a sequential and iterative design of the workshops, adopting the cultural engagement approaches across the four workshops, from cross-cultural to inter-cultural and transcultural stances in allowing experimentation with different researcher positionalities and engagement modes within the DM domain. These workshops aim to elicit RMEs' values, aspirations and practices, while also supporting their translation into viable marketplace design implications with RMEs (explain further in 6.2).

Each workshop was reflexively adapted based on field data, producing a progressive iteration of the cultural engagement approaches and exploring the distinct outputs each stance could yield. The following table distills how each workshop was positioned along this continuum, illustrating shifts in positionality and methods.

Table 6.1 – Summary of workshop approaches through the Cultural Engagement Approach.

	Workshop I: Digital Platform Use and Challenges	**Workshop II:** Participatory Design of Platforms	**Workshop III:** Futuring	**Workshop IV:** Community-Based Co-Design
Location	Bengoh, Kuching	Bawang Assan, Sibu	Long Semadoh, Lawas	Sibu
No. of Participants	17	19	8	19
Cultural Engagement Approach	Cross cultural	Inter cultural	Inter cultural	Trans cultural
Design Paradigm	User-Centered Design	Participatory Design	Speculative Design	Speculative Design & Participatory Design
HCI Waves	Wave 1: Cognitive science, humans as subjects	Wave 2: Collaboration and interactions	Wave 2: Collaboration and interactions	Wave 3: Embodied experience and new meaning making
Business Approach	Top-Down	Bottoms-Up	Bottoms-Up	Hybrid
Development Approach	Need-Based	Asset-Based	Asset-Based	
Participants	Micro-entrepreneurs	Micro-entrepreneurs, Digital Marketplace Executives	Micro-entrepreneurs	Micro-entrepreneurs, Digital Marketplace Executives and Designers
Design Methods	Prompt Cards Personas Scenario-Building	Prompt Cards Personas Scenario-Building Wireframing	What if's Future 'Drive'	Ethnography Prompt Cards Wireframing

6.2 PARTICIPATORY DESIGN WORKSHOPS

The following sub-sections detail each workshop's location, participants, engagement stance, and methods, highlighting the rationale for its design and the insights it generated. Workshops 1 and 2 focused on diagnosing current platform use and exploring participatory design methods; Workshop 3 adopted a speculative "futuring" approach to elicit long-term aspirations; and Workshop 4 brought local and external actors together in a transcultural co-design process to translate earlier insights into tangible interface concepts. List of participants and their micro-enterprises are listed in Appendix C.3.

6.2.1 Workshop 1- Bengoh (cross-cultural, user-centered)

The first workshop was conducted in Bengoh with RMEs who had expressed uncertainty and unfamiliarity with DM platforms during prior ethnographic fieldwork (see Chapter 5), often requesting digital literacy '*kursus'* ("courses") that they felt were difficult to access. Adopting a *cross-cultural* engagement, needs-based approach (Winschiers-Theophilus et al., 2019) common in government and NGO-led programmes (see Chapter 4), this session mirrored top-down problem-driven interventions, surfacing what such models yield in practice.

Conducted in Malay, the full-day workshop began with ice-breakers to build rapport and group familiarity (See Appendix C.4 for structure). This was followed by a reflective exercise and discussion on participants' current use of DM platforms, including the extent and nature of their engagement, along with associated barriers such as technological confidence, infrastructural challenges, and trust in DM platforms. A hands-on digital entrepreneurship skills session followed, conducted by the researcher in response to RMEs' request. The session introduced various DM platforms and guided account set-up, serving both as capacity building and as a '*priming exercise'*, common in PD to familiarise participants with the subject matter (Brandht et al., 2013).

Participants were then divided into sector-based groups of up to five (e.g., food, packaged goods, accommodation) and identified preferred and non-preferred platforms using DM platform prompt cards (Figure 6.1a) consisting

of a range of DM platforms and mobile commerce applications available in Sarawak. The groups then set up business accounts on a preferred platform while thinking aloud. To surface locally situated challenges and spark initial co-creation, the final activity introduced *personas* that are fictionalised but plausible profiles, created based on prior ethnographic insights of RME types, and their corresponding challenges in the local region. Each group received a *persona* representing a RME of their sector, with contextual details, challenges and aspirations (Figure 6.2).



Figure 6.1 – (a) The digital marketplace platform prompt cards given to participants during the workshop session. (b) Participants working on the group tasks during the workshop in Bengoh.

Participants used these personas to generate new scenarios and reflect on the persona's likely experiences navigating DM platforms. This *scenario-building* technique (Madsen & Nielsen, 2009) encouraged critical reflection on platform fit and amplified local narratives without requiring participants to personally disclose their own challenges (Bowen et al., 2020).

The participants of this workshop were recruited through existing ethnographic networks and the local PEDi centre ('Digital Economy Centre'). The venue was intentionally selected to support continuity and sustainability, as PEDi routinely hosts entrepreneurial training sessions. PEDi managers also assisted in participant recruitment and workshop facilitation. A total of 19 participants from Bengoh and Bau attended the workshop. As with all workshops, participants were compensated in line with community norms.

While participants gained practical skills, the workshop that mirrored formalist digitalisation strategies in Sarawak and more dated PD approaches (Winschiers-Theophilus et al., 2019), revealed the limitations of deficit-

driven approaches in addressing the socio-technical complexity of rural digital entrepreneurship. These insights informed the design of subsequent workshops.

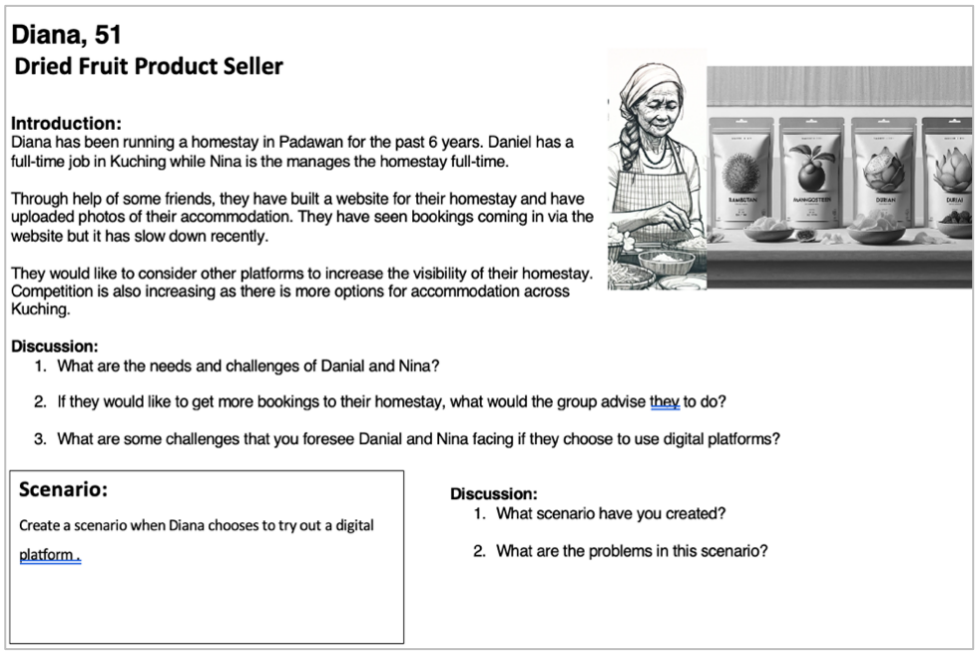


Figure 6.2– Example of a *persona* handed out during the workshop, designed based on ethnographic insight from local entrepreneurial community. Participants were then asked to contextualise the case through scenario-building as seen above.

Workshop 2 – Bawang Assan (inter-cultural, participatory design)

Shifting from a needs-based to asset-based approach (Loh, 2025), this workshop adopted an inter-cultural participatory design stance (Winschiers-Theophilus et al., 2019), that positioned RMEs as experts of their domain and owners of local knowledge, with researchers acting as facilitators rather than instructors. This approach emphasised community participation and empowerment over immediate problem-solving. Rather than 'fixing' what is deficient, the aim of the workshop was to learn from local epistemologies, surfacing insights into rural commerce, social relations and digital engagement strategies often overlooked in mainstream platform design (Bong et al., 2024).

Hosted in a familiar community space (see Figure 6.3 and 6.5), the session was conducted in Malay and Iban (indigenous language) to foster comfort and accessibility. Participants engaged in a hands-on design activity titled "Opening an Online Shop", adapted from the persona-scenario method from Workshop 1.



Figure 6.3 - Image from the Bawang Assan workshop, ran in a longhouse. Participants can be seen working in groups on 'opening' their 'online shop', a local metaphor used for co-designing a digital marketplace interface.

This metaphor, drawn from the local Malay term *buka kedai* was chosen to reflect familiar marketplace practices and reduce the abstraction often associated with "design" that may alienate RMEs. (Bong et al., 2025). The workshops were conducted in locally preferred ways of speaking and expressing to support participants' engagement, including the drawing, sketching, singing and communicating in groups. The flexibility of using native languages facilitated participation and expressed the local voice and the knowledge it embodies, not typically included in cross-cultural settings.

In the co-design sessions, participants were provided with *prompts cards* (Appendix C.4) detailing both conventional and unconventional product attributes (e.g., size, seller details, delivery information, sensory attributes like taste or smell, historicity, cultural significance etc.). These attributes were based on prior ethnographic fieldwork and literature (Malekpour et al., 2022; Krishna, 2012; Petit et al., 2019; Amblee and Bui, 2011; Marsh, 2023, Bong et al., 2024), intentionally including those that are beyond platform defaults

to allow participants to imagine a digital marketplace grounded in their own way of seeing, selling, and interacting (see table C.4.1 in Appendix C.4).

Aligning with the specific community interaction protocols of the community described by Loh et al. (2022), participants were recruited via community leaders through a snowball sampling, complemented with purposive sampling (Bryman, 2016). This is to ensure the inclusion of diverse and marginalised stakeholders, particularly women and older sellers, as well as aspiring RMEs with diverse trading practices, product types and levels of digital familiarity. Representatives from local digital agencies and DM stakeholders were also invited to participate to better understand differing design logics and evaluate design implications.

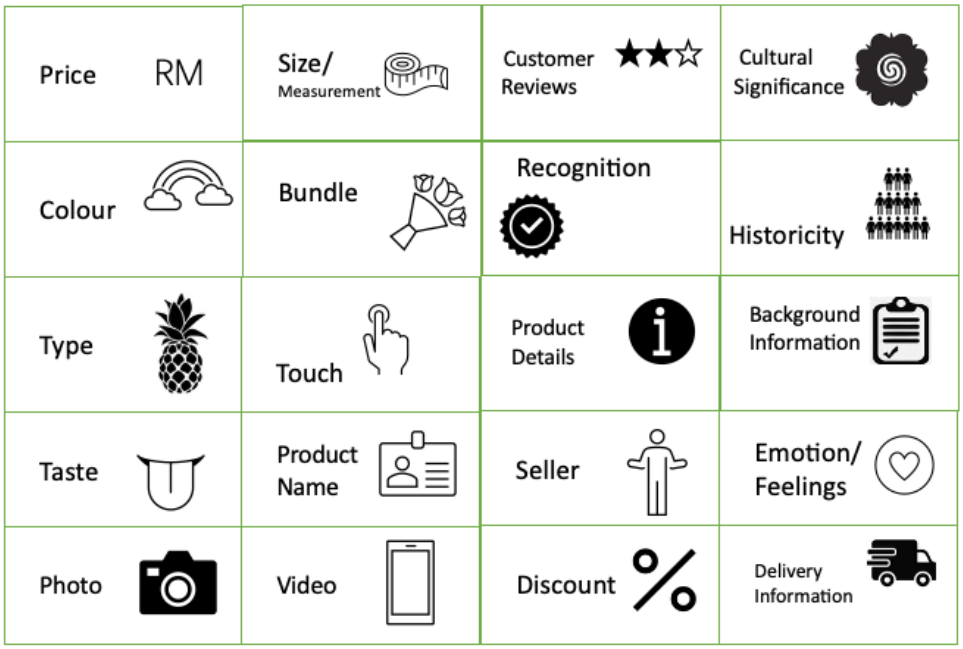


Figure 6.4 – Example of marketplace attributes provided to participants during the workshop.

The workshop generated tangible interface propositions such as listings with voice notes and interpersonal trust cues that reflected community-defined priorities. These outputs became building blocks for subsequent workshops.



Figure 6.5 – Participants working in groups on the co-design activity in W2..

Workshop 3 – Long Semadoh (inter-cultural, futuring)

Conducted in remote Long Semadoh, this workshop adopted the speculative design technique of 'futuring' (Muashekele et al., 2023) to elicit aspirations of participants that are beyond their immediate challenges and constraints. Building on prior PD workshops, Workshop 3 shifted from current challenges (explored in W1) and current practices (explored in W2) to local values and desired futures for digital commerce. We positioned this workshop within the *inter-cultural* engagement continuum as the practice prioritises participant narratives (Winschiers-Theophilus et al., 2019), while researchers served primarily as facilitators rather than providers of solutions.



Figure 6.6 – Participants engaged in various preferred ways of communicating during the futuring workshop in Long Semadoh in expressing their future aspirations.

Conducted in Malay, the session began by exploring participants' associations with "selling online". This phrasing was deliberately chosen over technical terms like "digital commerce" or "platform use," acknowledging the limited internet infrastructure in the region and the sensitivity around technological literacy. Participants then introduced their enterprises through a five-minute drawing exercise.

Participants then reflected on what "the future" means to them, also employed by previous research in grounding the subsequent speculative session in local worldviews (Farias et al., 2022; Muashakele et al, 2023b). Preferred ways of speaking, drawing, sketching, and writing were encouraged, allowing participants to do as much of the representation as possible. The central activity invited participants to imagine a future free of existing challenges, using the *"what if"* futuring method (Muashakele et al, 2023a). Core futuring prompts such as "*What if the challenges your business faces now no longer existed?"* were introduced. Participants responded through storytelling and drawing, articulating their ideal vision for their micro-enterprise and their personal and community life.



Figure 6.7 – The adapted 'future drive' activity with two RMEs in discussing future rural businesses with the associated technologies.

Finally, we adapted the traditional "future walk" (as used in Muashekele et al., 2023) into a "future drive", whereby participants were driven with the researchers in a 4X4 truck, moving through the villages while engaging in

prompts about future trade and supporting technologies (Inayatullah, 2017). This mobility-based design technique was adapted in-situ due to the local weather changes whereby heavy rain prevented more interested RMEs from participating. Despite so, the method was found to foster a relaxed, place-infused conversations as the participants moved through the terrain of the village while imagining future technologies and commerce based upon their aspirations.

Six participants from diverse micro-enterprises and age groups attended the futuring workshop, while two participated in the future-drive activity. This third workshop did not produce wireframes or design features but yielded narratives of desire, imagined futures, and values, which helped inform the final workshop. It demonstrated the potential and limitations of speculative design with communities unfamiliar with digital platforms.

While not all participants had the language or imagination to imagine 'provocative' futures and accompanying technologies (Farias et al., 2022), the exercise still made space for imagining alternative futures grounded in local knowledge and practice (Lazem et al., 2024). In this way, the workshop expanded the PD repertoire by showing how speculative techniques can open conversations for DM design in settings where digital technology is aspirational, distant, or contested.

Workshop 4 – Sibu (trans-cultural, community-based co-design)

The final workshop adopted a transcultural community-based co-design (CBCD) approach (Winschiers-Theophilus et al., 2019) that brought together both local knowledge with external expertise to reimagine DM concepts that are both locally grounded and cross-culturally intelligible. Held as an accepted workshop during the Participatory Design Conference 2024 co-written with a local RME informant (Bong et al., 2024), the workshop brought together a community of local RMEs, researchers and international HCI and development academics and experts (see Appendix C.3). Participation was signed up in advance with statements of interest and were pre-selected based

on their alignment to the workshop (rural digitalisation, platform design, co-design with communities, or inclusive design).

The workshop format was co-created and iterated with local actors. For example, a list of 20 items was chosen pre-workshop based on local significance by local informants for circulation with participants. The rundown of the programme was also co-created with local researchers and local informant. For example, local informants with paired up with Malaysian participants as well as foreign participants, to ensure there are sufficient language capabilities within each group, as well as encouraging wider range of perspectives. The plan and materials built on prior ethnographic insights, and the findings from prior workshops.



Figure 6.8 – Researcher briefing the workshop participants before the market ethnography. To encourage interaction and better understanding, each group was given RM50 (approximately £9) for the purchase of items from the market sellers.

The immersive full-day workshop, co-led with RMEs, began with a market ethnography at Sibu Indoor Market, where trade history traces back to the 18th Century. Guided by local informants, participants were encouraged to engage different senses: observed, tasted, touched, smelled and listened, engaging directly with sellers through conversation and purchases to understand trade practices and local produce. This shared communing through market immersion created an experiential baseline with tangible materials (photos, notes, purchased items) to carry into the co-design space, anchoring the co-design in lived practices and embodied experiences rather than abstractions.



Figure 6.9 – a) Workshop participant explored the various local fruits through the guidance of local RMEs, without which these local understandings would be difficult to access. (b) Participants purchasing fruits in the market to observe the transactional interactions, whilst learning the embodied knowledge of picking, opening and tasting from local sellers.

After returning from the market, groups selected a locally significant item (e.g., traditional scarf; *engkalak*—an avocado-like fruit; *bunga kantan*—ginger flower; *salak*—snake fruit) to serve as their design probe. *Prompt cards* were handed out to encourage documentation of attributes, social cues, and interactions. The prompts drew on prior ethnographic insights and earlier workshop outputs and were iteratively refined with local informants.

To scaffold ideation, the facilitator presented several alternate marketplace models (Figure 6.10) as "inspiration by exemplars" (Kensing, 2004) in encouraging the generation of new ideas. These were not prescriptions but provocations to stimulate discussion. A local RME and a local digital platform designer (*Timogah.com*) further supported the scaffolding by sharing their engagement and operating of marketplace platforms in Sarawak, grounding the workshop in the lived experiences of local actors.

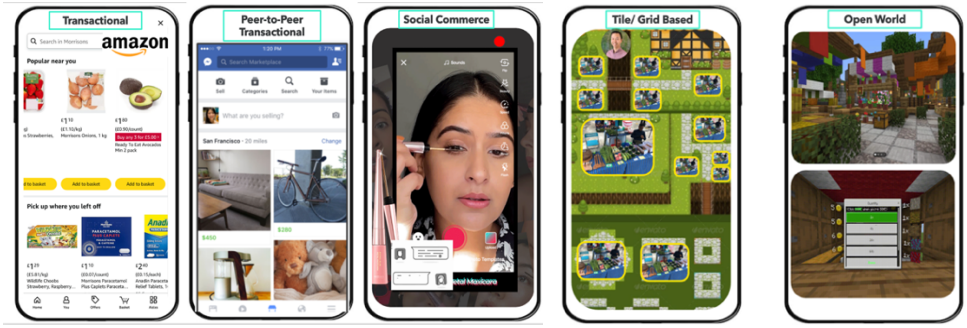


Figure 6.10 – The list of alternate marketplace platforms presented to participants as inspiration during the workshop.

Groups then moved into the hands-on co-design (Figure 6.11), working with paper wireframes to articulate marketplace concepts capable of communicating the essence of the chosen item while remaining usable for local sellers and buyers. Concepts were continuously tested with local informants. For instance, the *engkalak* group foregrounded perishability where informants stressed the need for same-day pickup or delivery prompts, prompting the team to re-sequence their flow. In another group, a local DM platform designer shared "we've never thought to include this", serving as pragmatic validation of designs.



Figure 6.11 - Participants using purchase items as design probes during the co-design activity.

This workshop translated earlier insights such as voice-based interaction, sensory product description and trust cues into platform interface concepts, showing how culturally rooted design logics can be translated into platform architectures through the transcultural engagement approach.

6.3 DATA ANALYSIS

The multimodal set of data gathered from the workshops included audio and video recordings, photographs, participant-generated artefacts, transcripts of workshop conversations and fieldnotes. Guided by reflexive thematic analysis (Braun & Clarke, 2019), our approach was ethnographically informed and draw on iterative theme development and grounded reflection across multiple data types (Bryman, 2016).

After each workshop, descriptive accounts of the workshop were extensively written up, reporting what happened and what participants said and drew.

These accounts were then returned to over time as new insights emerged from later workshops. In keeping with PD's commitment to participants' voice, we first attended to participants' own words, drawings, voice-notes, stated preferences, and wireframes, treating them as the primary sources from which early categories were named. Researcher fieldnotes and facilitation memos were then used to contextualise those accounts. This sequencing reflects PD traditions in which interpretation is co-constructed and grounded in what participants bring to the process.

As the workshops unfolded in Malay, local languages (such as Iban) and English, we preserved key emic terms (for example, the 'buka kedai' ('open shop') metaphor) and added brief glosses when reporting them. Participant generated artefacts such as the drawings and wireframes were read as data in their own right rather than illustrations, consistent with PD's attention to embodied and situated knowing.

Following initial coding and memoing cycles, we moved from workshop-specific themes to a cross-case synthesis. We clustered patterns that recurred across multiple sites and activities, while preserving site-specific nuances.. This process generated six meta themes that our participatory and speculative work reimagined while illustrating what is lost when platforms are introduced without co-creation. A sample code extract and a meta-theme map is provided in Appendix E.1, linking each theme to its originating participant materials and the design propositions that follow.

Data validation was both informal (initial interpretations and mock-ups were shared both during workshops) and formal (follow-up conversations with participants and key informants). Key thematic summaries were reviewed for resonance. The researcher, being Sarawakian, brought contextual and linguistic insight throughout the process, ensuring local voices, meanings and nuances were more accurately included throughout research and analysis. Regular analytic discussions helped refine emerging patterns across the dataset. Triangulation was conducted across fieldnotes, video and photograph documentation, visual sketches and conversational transcripts, allowing us to deepen interpretive insights and validity (Loh et al., 2022; Loh et al., 2023).

This multimodal analysis process reflects a broader commitment in PD and indigenous HCI to centre local epistemologies and forms of expression in technology design. The implications of this approach for reimagining digital marketplaces are examined in the discussion

6.4 FINDINGS

Through the observations, findings, and reflexivity from the workshops, we reflected on the of rural Bornean communities in their encounters, resistance, appropriation, and reimagination of digital marketplaces. The findings are presented through the overarching themes from the four individual workshops to better suit the presentation of this thesis (instead of reporting on individual workshop findings). The data table for all workshops can be found in Appendix E.1. Below we present the five key themes from our participatory design workshops that emerged through RTA.

6.4.1 Modalities of Rural Commerce - visibility and relationality through authenticity and connection

Rural commerce as illustrated by our workshop participants is vibrant and multimodal (i.e. voice, sound, taste, smell and sight). In Sarawak's markets as observed in the market ethnography of W4, sellers call out, sing and encourage buyers to engage in tasting, smelling, shaking and touching. These various modalities are central to how RMS conceive commerce, evident through the voice file below.

(Play Voice File 3)[12]

Translation:

> *"Dabai, dabai, dabai, dabai, three-sixty, three sixty only, dabai...*
> *Dabai, dabai, dabai, dabai three-sixty, three-sixty, hurry, hurry, hurry."*
> - Dabai (an indigenous fruit) seller, Sibu Indoor Market

[12] The reader is encouraged to listen to the associated audio files to experience a more immersive perspective on the verbal exchanges that undergird such marketplace interactions.

A short, lyrical, melodic song, specifically crafted by the caller, sometimes just for a particular moment, with the intent of attracting the attention of passers-by. As the elevated volume of the market cry lingers with the caller's tonality and personality, it signals distinctiveness yet familiarity, individuality that is not obnoxious, but inviting; not remote but interpersonal; not prefixed but flexible. This visceral and central mode by which RMEs in Sarawak enact selling, signal trust and build rapport demonstrates situated knowledge, woven through emotion, rhythm, and language. Practices as such reflect a worldview of commerce that is interwoven with culture and community, not just data-centric and metric-driven (Cutolo and Kenney, 2019; Grabher and König 2020). Where practiced, they are significant to the construction of sellers as an ongoing component of social life, inseparable from cultural life. The cries symbolise an informal, mutual space where conventions are melded, and economic aspects better understood: of price, quality, origin and quality (See Figure 6.12).

In both W2 and W4, participants consistently rebuilt these modalities on their own terms, especially the modality of voice. For example, a group in W2 drew a sound icon (Figure 6.12b) that is able to play their market cries. Constructed with two language (Mandarin and Bahasa Malaysia), the market cry was designed in-situ with the potential audience in mind, showing sellers' sensitivity towards their market buyers.

(Play Voice File 1)

"Lai lai, mari mari, limau madu, manis manis".

Translation:

'Come here, come here' (Mandarin); 'Come here, come here' (Bahasa Malaysia); 'Honey lemon, It's very sweet indeed' (Bahasa Malaysia).

- RME in Workshop 2, Bawang Assan

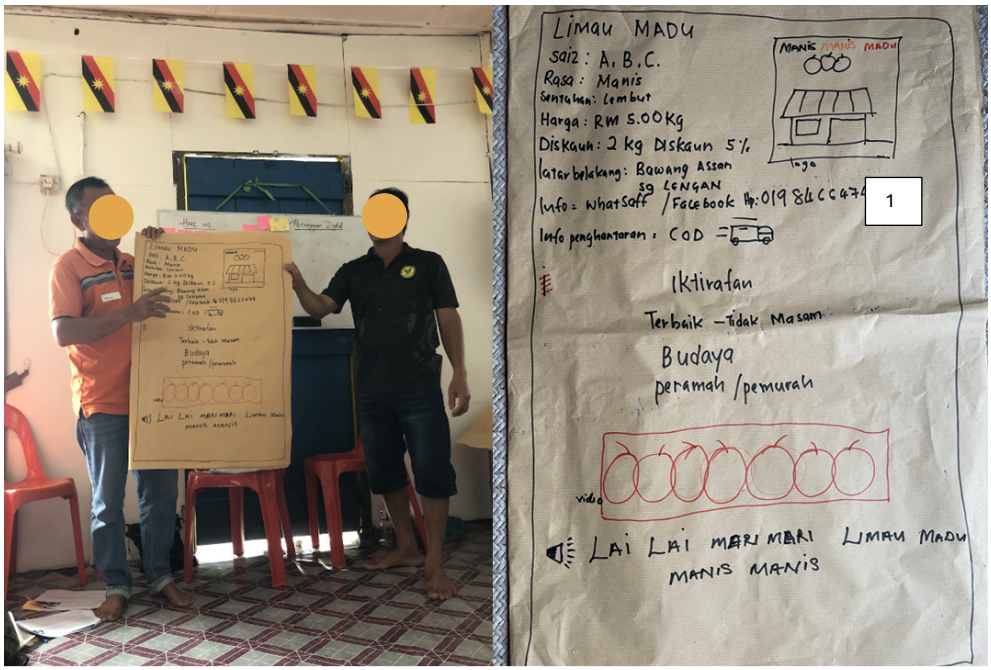


Figure 6.12: (a) RMEs sharing their design in W2. (b) The co-designed online store for their rural produce (honey lemon) prominently integrated market cries, highlighting the use of voice in representing themselves and their product. [1] Personal mobile number is also intentionally shared, as an invitation for direct, flexible and mutual communication.

In the same 'wireframe'(left), participants emphasised the personality of and relationship with the seller as key features for platform design.

D1: "The seller is really a generous person."

D2: "Yes a very generous person!"

D1:"As you can see he would offer discounts to his customers."

Generosity is a social construct that usually builds and maintains reciprocal relationships, leading to wide-ranging and long-term social and material benefits (Harvey et al. 2020). The ability to be visible, and to express one's voice, one's name, and one's own message on digital platforms, gives critical agency to the user in retaining and reproducing what constitutes their authenticity, knowledge and being (Giddens 1990).

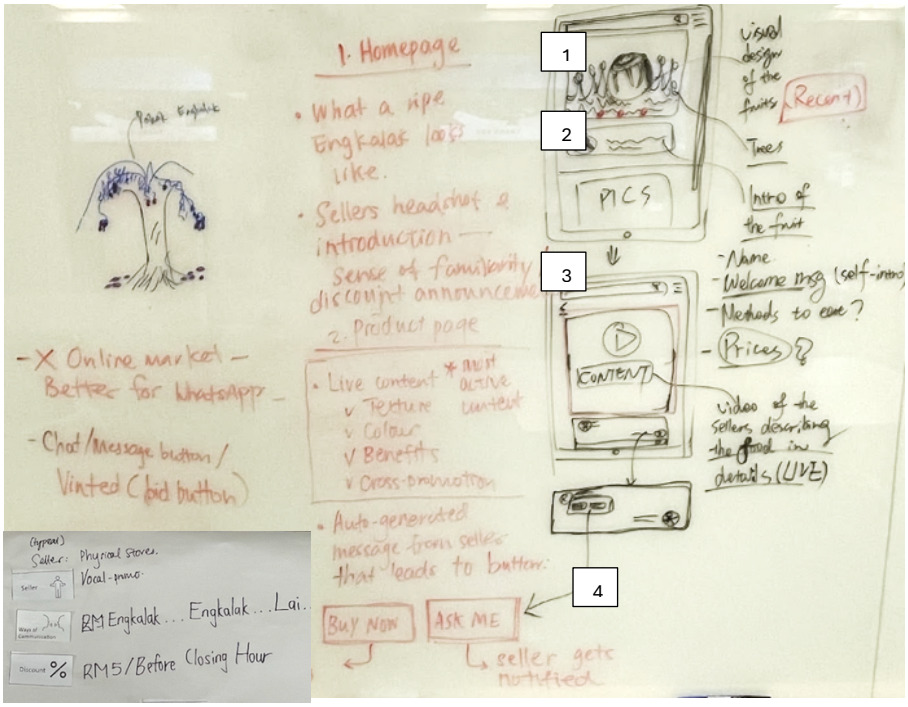


Figure 6.13 – Wireframe of Group 2, Workshop 4 of an 'online shop'. [1] Visual experience of the fruit through 3D feature. [2] Audio expression of seller allowing impromptu recording of voice notes. [3] Video feature curating how seller interacts and handles the fruit. [4] Options for purchase button ('Buy Now') or to engage with seller ('Ask Me').

The integrality of multi-modality in rural commerce is also richly illustrated through W4. After the market immersion where teams tasted, listened and interacted with local sellers, a group proposed short audio snippets embedded in the seller's profile, enabling DM sellers to record their voice in introducing themselves, their business and their products through a spontaneous manner.

> *"…we'll have the sellers' profile and then a voice recording. It can be a recording or anything such as, introducing the fruit or a welcome message, or like 'this is my store', 'I'm based where and where'...Since Engkalak is a seasonal fruit,this is where the person announces that 'the season is ending soon, and we're slowly having a discount'. And sellers can update their voice recording story like how you update stories (Instagram)".*
>
> – G2 Participant, Workshop 4

A simple three-dimensional spin feature of local produce was designed to approximate touch (Figure 6.13, [1]), while the incorporation of live video features (Figure 6.14) were recommended in allowing sellers to act more naturally in vocalising and illustrating their products, similar to how these are enacted in the local market.

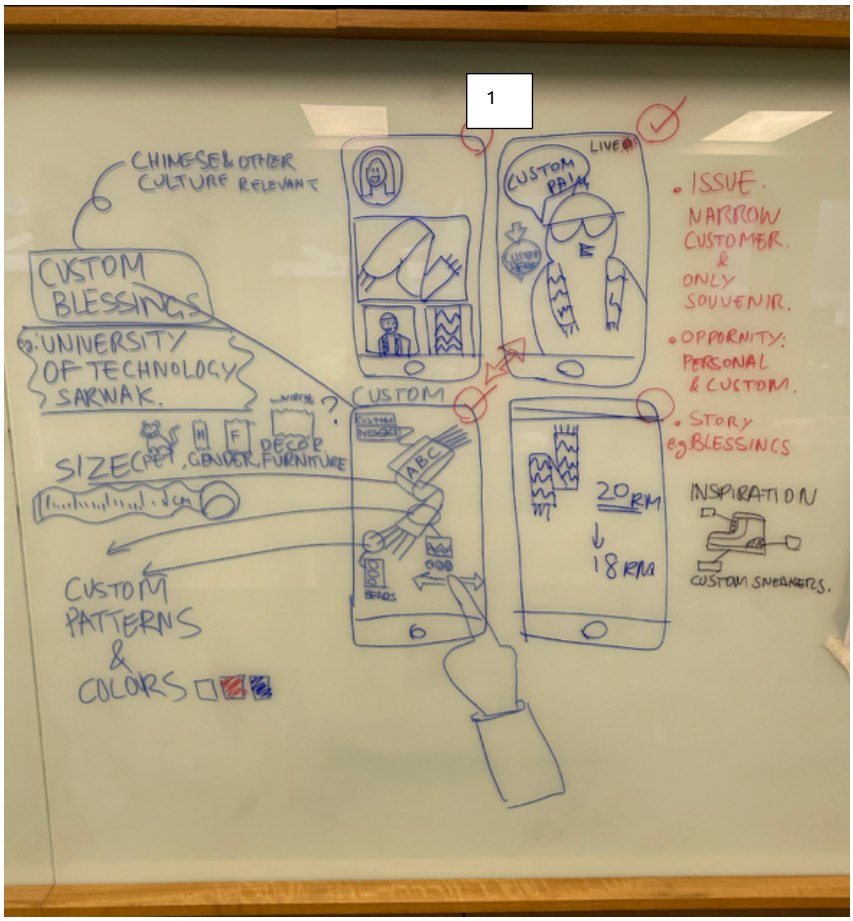


Figure 6.14 – Wireframe of Group 1, Workshop 4. [1] Live video feature is designed as a means to enable live interaction that incorporates multi-modalities such as voice, visual and the approximation of touch or taste (when applicable) through seller's interaction with the product.

What is noticeable through the wireframes are the evident lacking of text-based description, common among existing digital marketplaces. In its place are the richness of visual and audio modalities. When text fields created hesitation, these modalities can feel natural and agentic. For our rural participants, relationality and visibility are central to selling, while being an authentic and integral construction of self and community.

6.4.2 Social interaction through digital bricolaging

Building on the findings of interactional modalities, it was observed how social interactions are central to the making of the local market and essential to micro-entrepreneurship in these settings. Sellers interact in-situ and synchronously with various parties, both buyers and other sellers, through rich and diverse ways. Dialogue, humor, sarcasm, and banter are significant modes of interaction enacted alongside a range of body languages. They embody cultural and affective dimensions, demonstrating the richness of interactions that RME and communities are accustomed to. One international participant describes this as *'the sights and sounds of friendship'* during the market ethnography in W4. While largely absent from digital marketplaces, these social interactions are key in sustaining sociality in physical marketplaces.

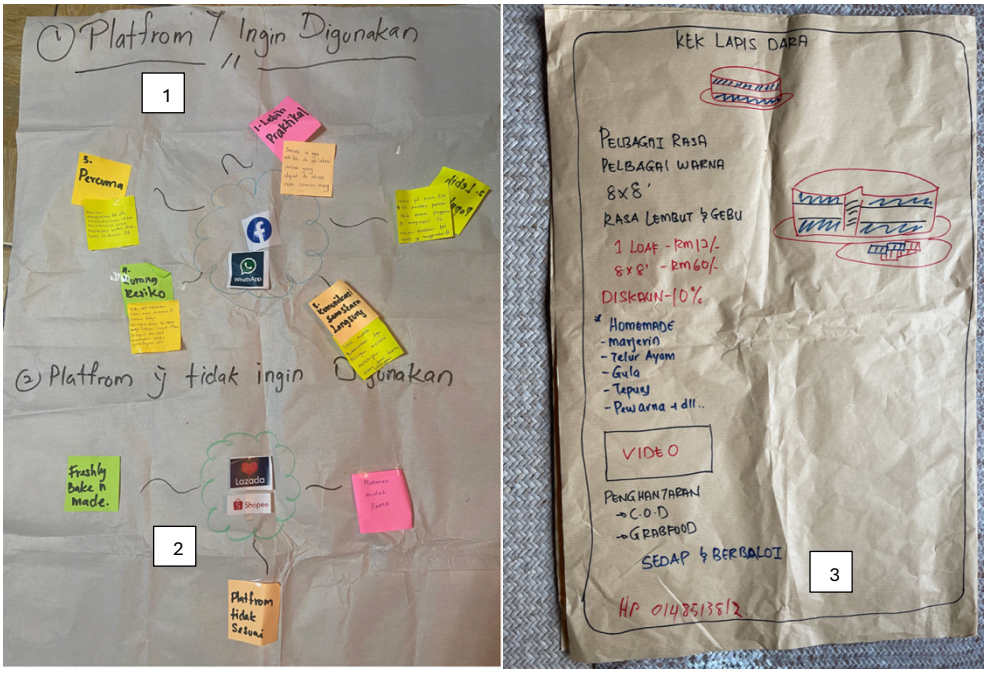


Figure 6.15: (a) W1 participants during the DM platform card sorting activity, listed Facebook and WhatsApp as preferred platforms [1] whilst discarding formalised platforms like Lazada and Shopee [2]. (b) In W2, one of the other 'online store' wireframes also feature RME's personal mobile number [3].

From all four workshops, RMEs were seen to recreate these social interactions in their digital commerce through a form of 'digital bricolaging'. Instead of communicating indirectly with customers through a DM platform, sellers in W1 repeatedly expressed their preference for widely adopted tools that allowed social and negotiable interactions that enables 'direct communication'. This is also observed in the 'online store' designs of W2, where personal mobile numbers are repeatedly shared among designs (Figure 6.12 and Figure 6.15), further demonstrating the desires of RMEs to have direct communication with buyers.

In W4, for example, the craft RME shares her non-use of conventional marketplace platforms to buy or sell. She chooses instead to use an ensemble of various social platforms to make contact, build rapport, agree sales, arrange payments, and manage deliveries. As illustrated in Figure 5.25, she described finding a supplier through a Facebook group, tracking them on TikTok, browses through past videos, and upon deciding that the account is trustworthy, she uses the seller's Facebook Messenger to 'speak' to them using the voice feature.

The seller returns a voice message, enabling both to share and judge voice, tone, trustworthiness and approachability. They instinctively proceed with a series of voice exchanges. Both parties intuitively move between platforms, according to the evolving interaction, and upon the key features of these platforms which collectively facilitate this flexibility and co-construction. This often starts, as in this case, with a profile-based platform like Facebook or Tik Tok where there is visibility of sellers' digital identities and footprint (profiles, stories, videos, friends etc.), to then more conversational platforms such as Messenger as the interaction progresses. The RME's enthusiasm for the role of voice is evident from the excerpt below:

> *"Then we move to Messenger. See! We can then start messaging each other...with voice!"* - RME, Craft, Bawang Assan

Voice messaging is the dominant use among rural communities, and direct, active, flexible and mutual communication is preferred. This is driven by

many factors, including the oral traditions of the communities, the naturalistic modality of conversing in voice as opposed to text (Thies, 2015), and that many languages of the indigenous groups do not have formalised writing (Vigh et al., 2025).

The limitations of existing digital marketplaces that have not included the richness of modalities that these communities prefer, limit their engagement and push them to make their own improvised solutions through assembling digital platforms and using them according to their existing practices (Hobbis and Hobbis 2023).

The social meanings of these practices, reproduced through voice notes, are re-highlighted through the digitally-mediated interaction showcase also in Chapter 5.4.3:

> S1: *"is this you sis?" (seller contacting buyer that has left their phone number on their social media post)*
>
> S2: *"Yes I left a comment on your Tik Tok video, can I order one of those please sis?"*

As noted by the craft ME in the quote above, the richness of social interaction, dynamic modalities of exchanges and voice-based communication features are, unfortunately, incredibly silent on digital e-commerce platforms. Sellers operating an online shop will typically be dealing with a text-based interface most of their time, with no ability to voice out their thoughts or replies, and converse naturally through speech in these settings. There is none or limited exchanges between seller and buyer in traditional computer mediated e-commerce, unless there is an issue. The default of non-conversation (unless there is a challenge), is counter-intuitive to local ways of thinking.

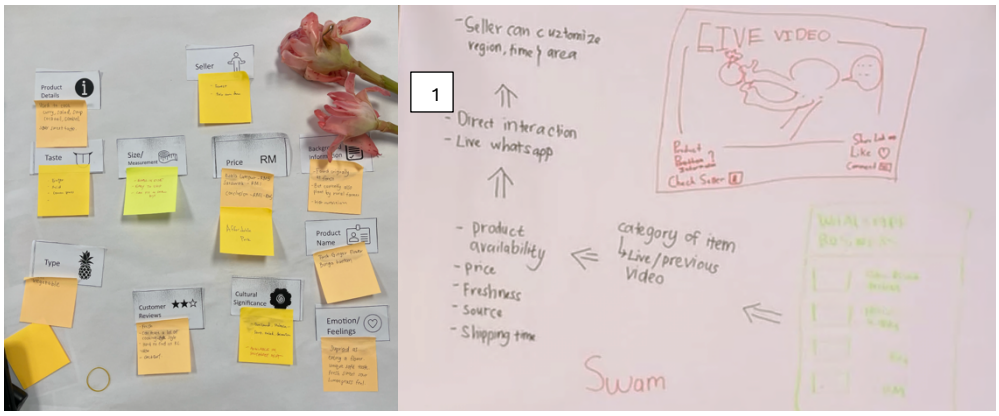


Figure 6.16- DM solution proposed by Group 3 from Workshop 4 that built e-commerce capabilities with video-hosting features on WhatsApp. [1] 'Direct communication' was stated one as of the main rationales.

In capitalising on the existing wide-spread use and preference for 'WhatsApp' among RMEs for commerce, Group 3 of Workshop 4 proposed a DM solution that builds on WhatsApp as a plug-in (Figure 6.16). Instead of redesigning a new DM platform, the proposed solution incorporates video-hosting capabilities from existing sites such as 'YouTube' into WhatsApp. While being able to retain the 'direct interaction' ability of WhatsApp alongside existing familiarity among RMEs, the group explained that the solution was designed specifically to support the informality of rural micro-enterprises in Sarawak.

These patterns demonstrates that RMEs are not technology passivist, but are actively assembling multichannel platforms that preserve the social affordances they value. In the next theme, this agency is observed to be expressed beyond creative bricolaging, through selective resistance and rejection of tools that are not malleable to local practice.

6.4.3 Plural Enterprising versus Platform Homogeneity

Digital commerce design often prescribes standardised ways of interacting and doing business. These includes ready-made categories, fixed listing rules, who counts as an entrepreneur, and what products are 'good enough' to be sold. In Sarawak however, RME showed us how diverse the landscape of enterprise logics can be, that contrasts against such one-size models. The homogenization that demands conformity or risks exclusion is evidenced through our workshop, as RMEs repeated highlighted their dissent towards adopting these conventional platforms.

Homogeneity that drives conformity or exclusion

In W1, many of the participants runs a homestay, which is a rural tourism experience of staying with a host family with food and lodging provided, alongside optional cultural exchanges. This locally constructed enterprise logic has a very different business model than typical accommodation platforms such as Airbnb or Booking.com. In the former, hospitality is framed explicitly as a dialogical and shared experience. The latter, a neatly carved-out accommodation that is individuated, curating a list of alienated property for hire, where voice plays no role. Although DM platforms such as these provide RMEs with the opportunity to access wider markets beyond their existing network of customers, signing up to these platforms in many ways means that ME would need to conform to the types of products and services that these platforms market to their customers.

This homogeneity narrows the range of viable option while restricting pluriversality and creativity, resulting in exclusion of those that do not wish to, or cannot conform.

"We do not want to use these platforms because they are not suitable or compatible with the services that we provide. We provide services of staying with a host family, hiking, river rowing, cooking classes, cultural tours alongside accommodation, and these platforms only caters for accommodation."

– Participant from Workshop 1, Bengoh

In the same workshop, the participants resist the signing up to conventional accommodation platforms such as Agoda or Airbnb, even though they are aware that these platforms access the global market. The resistance was due to the incompatibility of these sites that list accommodation, not cultural and social hospitality that the locals envision. Current platforms formats leave RME choosing between reshaping their businesses to conform to this homogeneity, if able to, abandon use or inventing informal work-arounds.

Homogeneity in ways of envisioning and operating business

RMEs have diverse ways of envisioning their businesses. As describe by participants in the futuring workshop (W3), RMEs share competing narratives on what their aspirations are for their rural enterprise. Some reported the desire to 'earn enough' to have a comfortable life, and not desiring huge growth and expansion; some envision an expanded business that would benefit the wider entrepreneurial communities financially, socially and culturally; while others see a future where digital technologies support learning of new skills that would support youth employment and retention.

These varied narratives are complimented by the diverse ways of which RMEs conduct their businesses. Drawing from observations during W4, participants described local sellers as having 'diverse store fronts' with a 'disciplined and structure in curation' which are relevant to individual seller's preference, even though it can come across as random whereby 'related and unrelated products are curated in the same store'. The flexibility to curate one's own store while having the agency to decide what items to sell contrasts with the constraining requirements of DMs that demands conformity to static and standardised formats. As expressed through the vignette below, the RME rejects the use of a local DM platform due to the top-down, pre-scripted requirements for being an online store seller on the platform:

"I don't use Lazada (local DM platform) because, for some reason, they require a seller to list at least 10 items for the account to be activated. Why do they need 10 items? I don't have 10 items to sell as a rural micro-entrepreneur"

- Participant from Workshop 1, Bengoh.

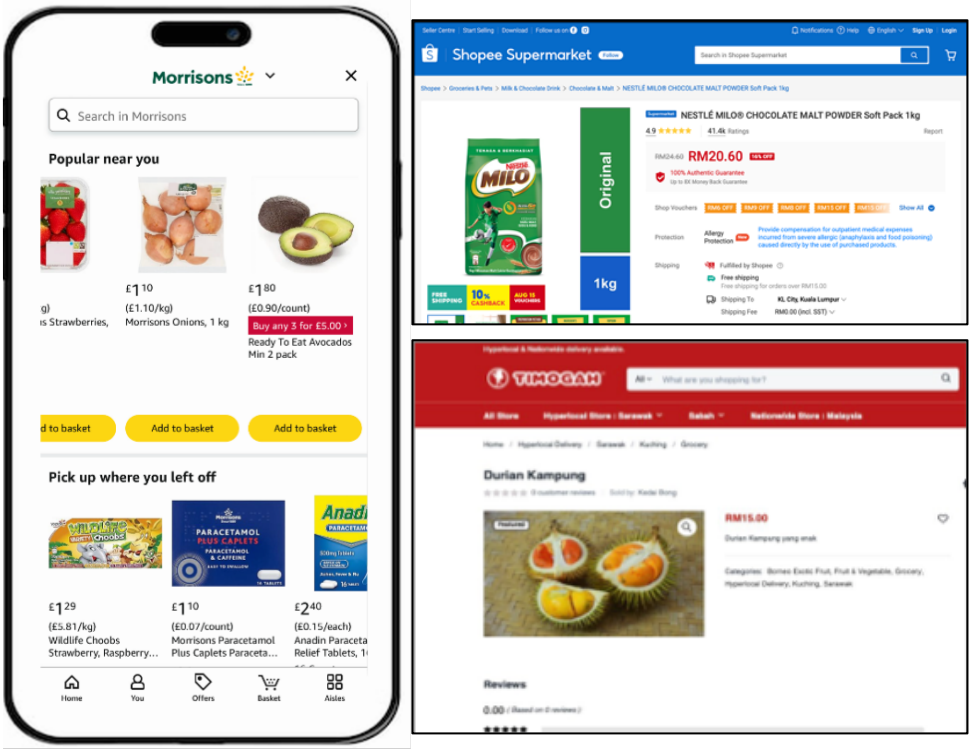


Figure 6.17 – Existing DM platforms, whether based in WEIRD context (left), or those based in Malaysia (top-right and bottom-right), are observed to have homogenised designs, typically text-heavy, seller-less, rigid and non-communicative.

DM platforms have various requirements, such as the above (listing 10 items), that are aligned with a formalised view of entrepreneurship. These requirements are often set up to protect the platform as well as customers. However, the unintended consequences of such regulations have alienated RMEs that have a different set of perspectives towards commerce. Below, tension is observed between an RME's use of Shopee, a key DM in Southeast Asia, due to its competing logic towards trade.

"The product description needed on Shopee is very, very complicated... you'll need to weigh it, measure it, and describe your packaging. In my opinion, these descriptions are good, but it is too complicated...In my opinion...I think you just need to tell them what the product is, what the brand is, the price and the expiry date. But when it needs to be as detailed as its height, ah...how do I measure these?"

- RME who used to sell 'sambal', a home-made chilli paste on Shopee

As DM platforms expanded into rural areas, RMEs either adopt them at the cost of abandoning their diverse ways of enterprising or, more often, choose not to use them. Reflecting on platform failures in Sarawak, a local digital marketplace CEO described the dangers of imposing standardised models without meaningful adaptation:

> *"So I don't want to 'copy-paste', but I was there. I was there... 'Copy-paste', as I compete (with the other platforms). The total defeat of Platform F (competitor) in Sarikei opened my eyes, you know, we cannot 'copy-paste'."*
> - CEO of Platform B, a local digital marketplace company.

This experience highlights how platform infrastructures often homogenise diverse ways of envisioning and practicing commerce, replicating business models from urban, WEIRD contexts without regard for local realities. While the "copy-paste" approach initially overlooked relational and cultural dynamics, the failure provided valuable lessons on the need for more contextually grounded designs.

One key site of homogenisation is the platform's standardised interface layout, which imposes a particular commercial logic, aesthetic preference, and epistemology of trust and value. As shown in Figure 6.17, the conventional 'online stall' is curated according to design norms familiar to the WEIRD audience. It has fixed product displays, rigid descriptions, and text-heavy engagement, yet is far removed from the dynamism and creativity embedded in a typical market seller.

These accounts reveal how platform infrastructures do not simply enable commerce; they actively reshape it. In doing so, they risk erasing the diverse entrepreneurial logics that sustain local economies. DMs that acknowledge this plurality must accommodate diverse enterprise logics, flexible product mixes, and culturally grounded ways of presenting value. At such, designing for such flexibility sets the stage for the next theme, where the focus shifts from structural choice to multisensory and embodied practices that make those choices come alive in sound, smell, and touch.

6.4.4 Multisensory and embodied local knowledge

Building from the multi-modalities of rural commerce described in 6.4.1, our workshops also highlighted the multisensory components of rural products, and its relations to embodied local knowledge in these settings. Participants across W2 and W4 have consistently used multisensory descriptions in describing their products, capturing touch, taste, sound and smell that goes beyond existing visual representation of products on DMs.

As shown through the participants' workings below (Figure 6.18), participants described their product – honey lime, as *soft* under 'touch', and *sweet* under 'taste' (highlighted in red circles). They have also chosen affective and socio-cultural cards such as 'culture', 'historicity' and 'feelings' (highlighted in blue), showing that selling in their context goes beyond the utility of description for mere transaction.[13]

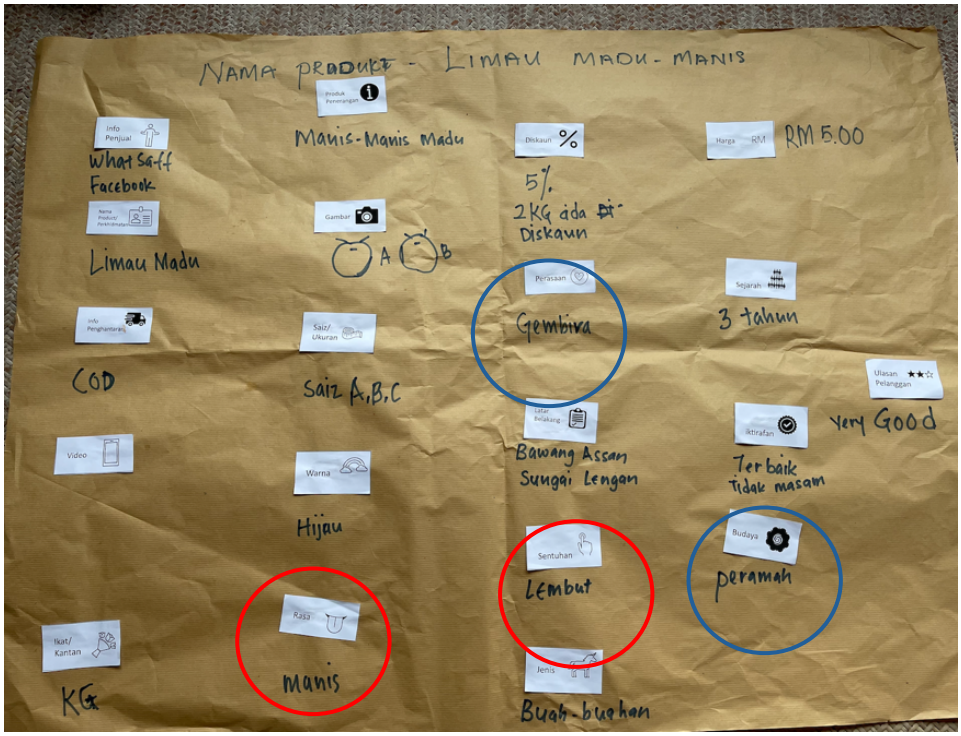


Figure 6.18 – Participants using sensory and emotive attributes to describe their product, attributes that are non-common in conventional DMs.

[13] In W2 and W4 we included sensory attributes such as taste and touch, alongside both conventional and unconventional product attributes (described in 6.3) as prompt cards to observe how participants would choose them in the designing their online store. Full list of card prompts are in Appendix C.

Further observed in W4, participants upon returning from the immersive market ethnography session, proceeded to utilise similar prompt cards to describe their rural products for the designing of an online store. As seen in the two worksheets below, a range of sensory, emotive and socio-cultural descriptions were used to describe the rural products of the respective group: ginger flower (left) and engkalak (right).

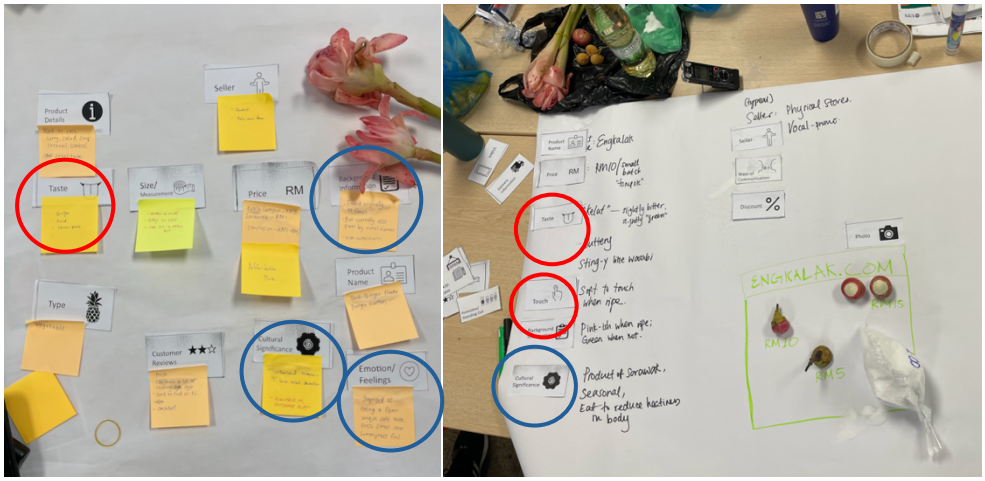


Figure 6.19 – Participants from Workshop 4 mirroring the use of similar product descriptors through sensory, emotive and cultural attributes.

These descriptions represented what is culturally relevant to local RMEs when describing local product, one that interlinks background information, cultural significance with various senses and feelings. Existing DM platforms however have not accounted for these dimensions of descriptors, resorting towards standardised dimensions (such as weight, height, width) that though are equally important, do not translate the dynamicity of these locally treasured items.

Aside from missing culturally and locally relevant modes of sensing in describing products, our workshop also shows that conventional platforms' universalised design risks endangering local and embodied knowledge. In most DM websites or applications, information of local products are not only lost when being translated towards a 'store front', but the limitations of existing DM designs restricts the dissemination of rich embodied knowledge that is at present, widely shared in physical markets. Below, a local durian fruit is used as an example.

The durian, a controversial and beloved fruit due to its strong taste and smell is crowned the 'king of fruits' by local patrons in Malaysia (Bong et al., 2024). It is typically closely examined before purchase using a mixture of senses and tacit knowledge: its shine and colour; its fragrance; its touch in the hand, all conveying ripeness, taste, scent and strength. These multi-dimensional qualities of the durian are accessible through embodied knowledge that is locally taught and learned, not accessible through conventional digital marketplaces.



Figure 6.20 - Local informant demonstrating how to pick the right durian. An embodied knowledge through sight, smell and touch.

Refer to Figure 6.20 and (Play Voice File 4):

> *"(Holds in hand, flips around, observed and compared)...Normally, when it is wide open (referring to the fruit's opening), that means it is not too good. It means it is exposed. (Picks up another durian)...Like this (one), it is much better, because it is not exposed (proceeds to smell it)."*
>
> - Heineken Laluan, CEO of Timogah

Mr Laluan, a representative of a digital marketplace who participated in W4, describes what constitutes a good durian in the vignette above, while also offering a glimpse into the embodied knowledge of a local in recognising the scent, touch, and sight of a ripe durian, honed through years of practice and immersion in the local market scene. This fruit presents itself as a good example of how such dynamic products that engages multi-senses are flattened of a product. The voice of the local community is both a symbol and a medium of embodied knowledge, highlighting the importance of privileging

not just intellectual knowledge on digital interfaces through text, but a need to give voice to embodied aspects of cultural attributes accessed through sound, smell, touch and sight (Kyriakoullis and Zaphiris 2016; Pink 2011).

Including these different dimensions enriches HCI in e-commerce, and is essential in sustaining and maintaining local and indigenous knowledge (Hobbis and Hobbis 2023; Siew et al. 2013) as communities navigate the digitalisation of marketplaces.

6.5 DISCUSSION

Our findings, derived from the accounts of members of the rural market community in Malaysia, highlight the need to acknowledge the diverse range of expressions in rural and non-WEIRD contexts. We now turn towards unpacking how the findings challenge dominant design logics, and serve as building blocks towards the reimagination of digital marketplaces (Bong et al. 2024; Zhao 2024).

6.5.1 Reclaiming and re-centering local voices and epistemologies

“Voice", as elicited from this thesis is not merely a sensory input modality but a deeply embedded expression of local epistemology, identity and agency (Islam et al. 2024). As detailed in 6.4.1, market cries are central to selling, signalling trust, and building rapport. These practices reflect a worldview of commerce interwoven with culture, community, and relationality.

In Sarawak, physical marketplaces are as much sites of mutuality, conviviality, and the exchange of local stories and embodied knowledge as they are spaces for monetary transactions. Commerce therefore is interpersonal, social, non-standardised and reliant on relational practices. While such social content of trading appeared important to commerce in Sarawak, the conduct of culturally significant practices can also be vital to maintaining one’s sense of identity, self and wellbeing (Goffman, 2023),

impacting how rural and marginalised groups act, be and belong in a marketplace.

Our workshops present the juxtapositions between the demands of externally designed infrastructure, and the routinely constructed, locally situated needs of communities. The outcomes were both limited adoption of digital platforms, hindering the designers' objectives and feelings of exclusion, and the incompatibility and anxiety among communities when it comes to DM platforms. These emotions reflect the social significance of the local market practices, whose discontinuance threatens the social systems they are constitutive of (Giddens, 1993).

Local, more inclusive forms of commerce, exchange and sharing continued, signifying a provocation for designers to emulate these. Echoing Spivak (Spivak, 2023), this study contend that DM designers must move beyond simply including the subaltern's voice or improving accessibility. Rather, they must reframe marketplaces through local epistemologies of trust, identity and relationality, treating them as primary sources of knowledge, not just supplemental to existing models (Devanuj and Joshi 2013; Islam et al., 2024). This underscores the opportunity and significance for the re-centering of local epistemological frames, treating them as legitimate and generative source of design (Kambunga et al. 2021; Winschiers-Theophilus and Bidwell 2013), as further explored in the next section.

6.5.2 Reframing 'interaction' via co-production

Our empirical findings co-constructed through participatory embodied methods with rural Sarawakians, challenge the narrow assumptions about what constitutes interaction. Usability paradigms from WEIRD contexts tend to privilege text-based, asynchronous and transactional modes of communication (Yadav and Varadarajan, 2005). By reducing users to sellers or buyers rather than relational agents embedded in social, cultural and affective relationships, these design paradigms overlook how interaction is locally practiced, relationally enacted and multimodally expressed (Devanuj

and Joshi., 2013; Kandhari et al., 2018; Loh et al., 2022; Zaman and Winschiers-Theophilus 2015).

In physical marketplaces, commerce is rarely silent or purely transactional. Both seller-to-seller and seller-to-buyer interactions are multi-sensory, symbolic, gestural and affective (Lobo et al., 2010; Mayor, 2016). From haggling and banter to market cries and laughter, these forms of interactions are integral to cultivating trust, negotiating value, and reinforcing shared identities (Papacharalampous, 2021), as well as the co-construction of how markets function. Such relationships often unfold over time, enabling flexible practices like discretionary pricing or informal discounts, grounded in reciprocity and mutual recognition. In contrast, platform-mediated interactions are typically shaped by mechanisms such as algorithmic pricing, reviews and ratings (Kornberger et al., 2017), rather than the relational agency of individual users. Such systems constrain the fluid, context-sensitive, and relational dynamics that characterize traditional marketplaces.

In disabling situated forms of interaction, digital marketplaces can carry exclusionary implications. As shown by Loh et al. (2022), the omission of community-based communication channels such as voice, disproportionately affects communities that rely on such tradition. The study signifies opportunities to overcome this, in how RMEs co-produce ensemble digital solutions, using *Whatsapp* voice notes, *Tik Tok* videos and *Facebook Messenger* to enable means of dialogue, kinship, social meaning and interactivity absent from formal platforms.

Designing for interaction in such contexts thus requires a fundamental shift from static and universalized, to design and interaction as culturally embedded practices. As Plantin et al. (2018) argue, digital infrastructures shape and regulate social norms. If platforms silence certain modalities, they marginalize communities more reliant on those forms of interaction and risk altering how they relate. These findings call for an expansion of interaction design in marketplace platforms that goes beyond sets of technical affordances (Schoemaker et al., 2022), but are designed to enable locally

negotiated practices that are culturally grounded in local forms of engagements.

6.5.3 Resurfacing the politics of platform

Our case studies of rural Borneo communities reveal the tensions of introducing infrastructure rooted in Western design paradigms into contrasting contexts. These tensions are compounded when such platforms are framed as tools for sustainable development that promises inclusion and participation, yet intervene in culturally significant spaces such as Borneo's physical marketplaces. Rather than supporting local adaptation, DM platforms often arrive with what Akrich defined as a script on human behaviour (Akrich, 1992), structured with implicit demands of what constitute participation and with a pre-determined conceptualisation of commerce (Hobbis and Hobbis 2023). Designed through WEIRD logics of efficiency, standardization and individualism (Escobar, 2018; Iraniet al., 2010), they impose a homogenised, one-size-fits all worldview that marginalises localised knowledge, expression and enterprise practices (Bong et al., 2024; Hine 2020). These infrastructures, shaped by external capitalist ontologies (Mann and Iazzolino, 2021), risk sustaining existing institutional inequalities, as Suchman and Bishop argue (2000), while also constraining local articulated forms of interaction and the social constructions they enable (Pinch and Bijker, 1984).

As scholars in platform studies argue, interface design is not neutral but inherently ontological and political, shaping social norms, economic behaviors, and moral expectations (Cutolo and Kenney, 2019; Grabher and König, 2020). Platforms both facilitate transactions and encode assumptions about the "ideal" user, actively presume and shape their economic outlook, entrepreneurial motivation and economic performance (Mann and Iazzolino, 2021). Often rooted in the Western conceptualizations of the Schumpeterian or Kirznerian entrepreneur (Song, 2019) that are innovative, individualistic and opportunity-seeking, marketplace platforms are embedded with formalist economic framework that privileges profit maximisation and growth (Acs et

al., 2021) over alternative, community-centered forms of commerce. In contrast, RMEs of this study operate within a different entrepreneurial logic. Enterprises as such are deeply interwoven with family and local communities, often operating with situated constraints (Venugopal and Viswanathan, 2021), and have communal responsibilities (Adnan et al., 2016).

In this light, not only are commerce and interaction being reshaped, but the very notion of who counts as a legitimate market participant risk being redefined, gentrified and disembedded from cultural life (Grabher and König, 2020). HCI in DMs must hence actively confront the ontological and political biases of platform infrastructures (Bourdieu 1991; Mann and Iazzolino, 2021), questioning who is rendered visible, valued and legitimate within digital economies (Hobbis and Hobbis, 2023; Irani et al., 2010).

6.5.4 Methodological reflection on the cultural-engagement continuum

The four workshops were sequenced along the cultural engagement approaches (see 6.2), moving from cross- to trans-cultural stances to facilitate different PD positionalities that in turn shaped varied outcomes. Adapted from its original conception, the continuum was adopted to function as an analytic lens for deciding who leads and whose knowledge is foregrounded. Although moving across the continuum exposed limits, each workshop positionality contributed distinct insights (Table 6.2). More broadly, no single stance would delivered the study's contribution in isolation.

The cross-cultural W1 mirrored top-down rural ICT programmes that made visible the literacy frictions and platform mismatches that formalist roll-outs routinely overlook. Despite so, it provided RMEs with immediate and practical skills that enabled them to strengthen agency in their re-appropriation of platforms, albeit through ways that platforms have not intended. The co-learning and network support of RMEs that emerged from W1 and W2 through the gathering of RMEs were observed to be impactful in supporting the learning of RMEs, beyond the more formalist training formats,

echoing Hui et al. (2020) that found community collectives effective as supportive networks in facilitating low-tech support (Hui et al., 2020).

The inter-cultural workshop 2 that emphasised the assets and agency of community members surfaced the findings on multi-modalities of rural commerce and the importance of relational trust among RMEs. However, it did not explore the deeper, unspoken aspirations of the community, which the futuring workshop 3 facilitated. The latter enable the study to move beyond immediate constraints and solution frameworks in allowing participants to foreground the future as sources of inspiration for supporting technologies. Finally, the trans-cultural co-design workshop (W4) blended insider knowledge with outside expertise in real time, translating earlier insights into actionable features.

Table 6.2 – Reflection on various cultural engagement stance and key insights yield.

Workshop	Stance	Key insights	Example Output
1	Cross-cultural	• Challenge in DM adoption • Platform mismatch • Bricolage of existing platforms • Effectiveness of collective learning	• Adoption barriers list • Co-created solutions for circumventing DM use
2	Inter-cultural	• Multi-modalities in commerce • Trust cues through relationality • Sensory, affective and socio-cultural attributes	• Wireframes with voice modality, multi-sensory attributes of products, and WhatsApp contact for direct communication.
3	Inter-cultural (futuring)	• Community ethos and cultural resilience • Purpose-driven technology • Digital livelihood reimagined that is multi-modal • Divergent futures aspired	• Narrated visions of aspirations • Community priorities for future technologies
4	Trans-cultural	• Multisensory and embodied commerce • Seller centricity in rural commerce • Innovation from familiar and low-tech • Incorporation of locally accustomed modality in commerce	• Wireframes of envisioned marketplace concepts

The cross-cultural phase clarified the problem space, whereas the inter-cultural phases surfaced culturally rooted design logics, and the trans-cultural phase demonstrated how those logics can travel into platform architecture. In combination, these approaches provided a structured yet flexible pathway for

turning plural voices into design implications that are both contextually sensitive and technically intelligible.

6.6 CHAPTER SUMMARY

This chapter has shown how RMEs in Sarawak reimagined DMs, revealing the centrality of multimodal commerce, interactive relationalities, multisensory product knowledge and embodied knowledge to platform adoption and use.

Aside from being sites of economic exchanges, rural marketplaces features a wide repertoire of voices, gestures and sensory engagements, all central to cultural and social reproduction where trust, relationality and interact-ability are cultivated through. Digital platforms, by flattening these dimensions, risk rendering commerce less social, alienating rural users and erasing valuable knowledge and interactional practices essential for more effective design. The findings challenge designers to move beyond localisation towards pluriversal design futures that embed local epistemologies as core logics of platform architecture. This entails epistemic humility, co-production, and openness to outcomes that may depart from conventional platform metrics, but which better sustain the social, cultural, and economic life of the communities they serve (Zaman, 2023).

This work advances PD by demonstrating the utility of sequencing engagement stances along the cultural engagement continuum and integrating speculative futuring ideas and insights into actionable design implications, offering a framework for culturally grounded technology co-design. For indigenous HCI, this work provides empirical grounding in the underexplored domain of DM, showing how localised PD approaches can inform design logics in e-commerce that resist homogenisation.

The next chapter builds on these insights by shifting the analytical lens from design possibilities to structural explanations. Drawing on data from ethnography, PD workshops, the mapping study, and elite interviews with platform ecosystem stakeholders, it interrogates why DM platforms have struggled to gain traction among RMEs.

7

MORPHOGENETIC/ MORPHOSTATIC ANALYSIS OF RURAL MICRO-ENTREPRENEURS' DISENGAGEMENT FROM DIGITAL MARKETPLACES IN SARAWAK

Our previous chapters have empirically laid out how rural microentrepreneurs (RMEs) in Sarawak disengaged, resisted, and subverted digital marketplace (DM) platforms. This is seen particularly in Chapter 5.5, where RMEs displayed general interest to learn but remain unengaged, or disengaged entirely with conventional DMs due to various social, technical and feasibility issues. In the participatory design (PD) workshops in Chapter 6, RMEs continue to display distance with DMs, providing their rationales and clarifications for their reservations, particularly in Workshop 1 and 2. This disengagement persists despite sustained national and state-level drives toward a digital economy and the proliferation of DM platforms in the region, as illustrated through the desk study findings in Chapter 4.2.

Building on the ethnographic overview of RMEs' daily work within rural settings in Chapter 5, and the contrast between existing DM platforms with how RMEs reimagined them in Chapter 6, this chapter now examines RQ3 on *why RMEs disengage from conventional DM platforms in Sarawak*. Understanding the reasons for disengagement within this context is essential for informing local platform and policy development, while ensuring RMEs have access to equitable and meaningful participation in digital commerce (Joshi and Mudliar, 2025).

Grounded in a critical realist (CR) research philosophy that is emancipatory in intent and pluralist in method (Bhaskar, 1979), this chapter theorises the underlying *mechanisms* shaping RMEs' disengagement from DM platforms through Margaret Archer's morphogenetic/ morphostatic (M/M) framework (Archer, 1995). By analysing empirical findings across multiple studies, as purported by CR's methodological pluralism, the study draws on various empirical sources, including elite interviews, a desk study of policies and initiatives, ethnography, and participatory workshops, in seeking explanatory mechanisms for disengagement.

This chapter first outlines the theoretical framing of Archer's M/M approach within CR, alongside the rationale for its suitability to RQ3. The methodology of operationalising the framework is then detailed, including the list of data sources the study drew from, and how they were mapped onto the framework. After that, the chapter presents the findings on the structural and cultural conditions that pre-exist RME's engagement with DM platforms (T_1). This is followed by the analysis of RMEs' responses to these conditions (T_2 – T_3), with the outcomes presented and discussed in (T_4), followed by a concluding section of the chapter.

7.1 ARCHER'S MORPHOGENETIC FRAMEWORK

Despite well-intentioned digital policies and initiatives that encourage e-commerce and digital entrepreneurship, many RMEs remained disengaged from conventional DM platforms. Why do DM platforms fail to be utilised by RMEs in Sarawak?

From a CR perspective, the study of why societies change or remain static requires the consideration of the meta-theoretical commitments of how social reality is accounted for. Meta-theory refers to the underlying assumptions about what social reality is, how it functions, and what social science aims to accomplish. Existing meta-theories can be summarised in a spectrum. On one end, reductionist meta-theories (such as structuralism and functionalism) privilege structures and emphasise systemic forces like institutions, norms, and class relations, while leaving individuals as mere 'bearers' of structure

(Althusser, 1971). On the other end, voluntarist meta-theories (such as rational choice theory) emphasise individual agency and treat society as an aggregation of rational choices (Coleman, 1990). Both approaches overlook the interaction between structure and agency, either collapsing agency into structure or dissolving structure into action (Heeks and Wall, 2018; Rickly & Canavan, 2024). These interplays however, are especially visible in Sarawak, where infrastructural limitations, platform accessibility, local practices and culture, and entrepreneurial reflexivity all matter, therefore warranting a meta-theory that sufficiently and adequately considers their interlinkages.

Within CR, several meta-theories have been proposed in studying social change. Bhaskar (1979) first sought to address the duality of structure and agency through his *Transformational Model of Social Activity (TMSA).* He argued that 'society is both the ever-present condition and the continually reproduced outcome of human agency' (Bhaskar, 1979, p.36). In his view, structure pre-exists and conditions actions, but is either sustained or altered through actions.

Archer (1995) further built on Bhaskar's TMSA. She clarified the need to distinguish between structure, agency and culture (SAC), at least for the purpose of analysis and explanation, to avoid what she termed 'central conflation' (Archer, 1995). Being critical of meta-theories that conflate structure and agency, Archer identified three forms of conflation in social research: downward conflation (reducing agency to structure), upward conflation (reducing structure to agency) and central conflation (treating structure and culture as inseparable). The latter is particularly a critique of Giddens's influential structuration theory (Giddens, 1984). Although Giddens provided a crucial understanding of the recursive nature of social practices in that both structure and agency are interlinked, Archer felt that it was incompatible in meeting the explanatory aims that CR seeks in explaining why social change occurs or remains stable[14] (Archer, 1995).

[14] Archer critiqued structuration theory as 'analytically impotent', in that it merges structure and agency, inhibiting the ability to analyse the causal powers between them. The collapsing of temporality also makes it unsuitable in explaining why

In addressing the structure—agency debate, Archer proposed the M/M approach, which introduced the concept of *analytical dualism*. The concept recognises that structure and agency are intrinsically linked, but are temporally separated for analytical purposes. This methodological position allows for the examination of how these domains interact without conflating them into one another (Archer, 1995). Archer's framework is not a standalone social theory but serves as a "methodological complement" to CR ontology. It provides a toolkit for examining how structure, culture, and agency interact over time to produce either social change (morphogenesis) or stability (morphostasis). (Archer, 1995; Mutch, 2010).

This chapter therefore draws on CR's commitment towards explainability in social research (Bhaskar, 1978; Sayer, 2000; Porpora, 2015), while operationalising Archer's M/M approach in order to identify causal mechanisms and conditions that generate social outcomes across the three different temporalities of the framework. By structuring the phenomenon temporally, analytically distinguishing between structure, culture, and agency, the morphogenetic lens adds clarity about how patterns arise without collapsing structure or agency into one another.

It is worth noting however, that the mechanisms identified to explain disengagement are inferred for the studied sites and time periods for explanatory adequacy rather than universal generalisation. Yet in CR's view of open systems, mechanisms are trans-factual, indicating that the activation and empirical expression or mechanisms are dependent on local configuration of conditions, while recognising that their causal powers may operate beyond the original case. This refers to what Lawson (1997) calls *demi-regularities*, which are the 'occasional, but less than universal, actualisation of a mechanism, over a definite region of time-space' (Næss, 2019, p.476). Aligning with the CR's proposition of 'given configurations X, mechanism Y tends to generate outcome Z' (Lawson, 1997; Sayer, 2000), this chapter

stability persists in some cases and transformation occurs in others. In essence, Giddens's structuration theory does not seek nor finds it necessary to provide explanation, while Archer seeks 'analytical adequacy' beyond 'descriptive adequacy' in seeking explanatory mechanism within the CR tradition (Archer, 1995, p.92).

seeks to examine, within the structural and cultural *configurations* in Sarawak, the context-conditioned *mechanisms* that explain RMEs' disengagement *outcome*.

7.2 DATA ANALYSIS

In applying the M/M approach, the analysis draws on the broader thesis dataset and employs a focused explanatory lens through the T_1–T_4 framework (refer to Figure 3.4). Building on the concept of methodological pluralism and explanatory depth in CR (elaborated in Chapter 3), the researcher summarises the dataset corpus and demonstrates how the data were mapped to T_1/ T_2-T_3 and T_4, and how mechanisms of RMEs' disengagement from DMs were identified. To recap, the multiple qualitative sources include:

1. Desk study and mapping outcomes of policy documents and digital entrepreneurship initiatives (50 initiatives narrowed from 150).
2. Elite interviews with DM platforms (n=4) that included platform CEOs, platform account managers and ex-managers from both international and local DM platforms.
3. Elite interviews with digital entrepreneurship ecosystem stakeholders (n=10), which included digital policymakers, government agency executives, private incubators, digital hub managers, e-commerce enabler managers, and a Member of Parliament.
4. Ethnographic fieldwork across five rural sites over a period of nine months.
5. PD workshops (four sessions), where RMEs co-designed speculative DMs.

Considering the diverse data sources, each dataset underwent a two-stage coding process. Each dataset was independently pre-processed and inductively coded either in first order, thematically or through an emic 'coat hanger' approach (Chapter 5). Upon which, the datasets were re-coded abductively onto the morphogenetic framework to explain the digital platform disengagement among RMEs.

The coding process for desk study was presented in Chapter 4; the ethnographic emic data were presented as coat hangers in Chapter 5, while

the PD workshop was thematically coded and summarised in Chapter 6. As the analysis of the elite interview has not been discussed prior, it will be illustrated through the sections below.

7.2.1 Elite Interview Data Processing

Primary Coding (First-Order Inductive Coding)

Elite interview transcripts were first openly coded in NVivo, based on their relevance to the research questions (RQ1, RQ2 and RQ3). A list of 322 primary codes was generated from this exercise, organised around patterns relevant to the research question. These first-order codes captured the perspectives and logics of DM platform managers and executives, policy actors, initiative implementors and government agencies. A sample extract of primary codes is provided below:

Primary Codes	Sources	References	Created on
Platform manager's aim to grow sellers to draw commission from sales	1	1	10 Feb 2025 at 1:59:03 PM
Fixation on 'tech' start-up as KPI's for digital hub	3	10	10 Feb 2025 at 11:41:03 PM
MP Office's attempts with marketplace platform	1	1	3 Feb 2025 at 11:46:04 AM
Sarawak's focus on becoming a high-income state	1	2	3 Feb 2025 at 11:49:58 AM
Failure of mainstream platform due to lack of long-term commitment locally	1	3	1 Feb 2025 at 4:43:46 PM
Failure of local platforms due to copy & pasting business model	1	2	1 Feb 2025 at 4:47:12 PM
Information search and use of personal network to verify ideas	1	2	1 Feb 2025 at 4:56:55 PM
Simplicity and common sense needed in platforms	1	3	1 Feb 2025 at 5:14:02 PM
Structuring care and responsibility in the marketplace business model	1	4	30 Jan 2025 at 3:06:18 PM
Challenges of working with rural communities due to digital literacy	4	13	29 Jan 2025 at 5:37:59 PM

Table 7. 1 – Extract of elite interview coding from NVivo.

Secondary Coding (Second-Order Explanatory Coding using Archer's T_1)

The primary codes generated from open thematic coding were then recoded through a secondary coding based on the M/M temporal sequence. The stakeholders' top-down perspectives provided insights primarily informing the T_1 structural and cultural conditionings that shape RME's disengagement.

The table below demonstrates how the primary codes from Table 7.1 are abductively coded onto the T_1 Structure and Culture nodes:

	T_1 Structure – Policy/Platform	**T_1 Culture – Policy/Platform**	**T_1 Structure – Rural Community**	**T_1 Culture – Rural Community**
Sources	**Code / Theme**	**Code / Theme**	**Code / Theme**	**Code / Theme**
Platform T	Adapting DM business model based on market response	Platform narrative to 'inspire' rural communities toward commercialisation potential of rural products	Challenges of rural communities in using DMs due to infrastructural constraints	Perception of RMEs as lacking market readiness
	Agencies paying marketplace platform to run paid programmes	Start-up discourse and funding pitching culture	Geographical remoteness limiting platform reach	Norms of simplicity and direct communication in marketplace interaction
	Barriers of using digital platform – information-heavy workflows	Training community seen as distraction for platform operators		*Bidayuh* culture shaping views on entrepreneurship
	Challenge of balancing support of sellers and customer development	Normative expectation for RMEs to meet urban-product readiness		

Table 7.2 – Extract of secondary coding of elite interviews onto the Morphogenetic approach. Full list provided in Appendix E.2.1.

Codes were generated inductively for each of the data sources based on the relevance to the structural or cultural conditions of RMEs with DM platforms. From there, the codes were consolidated into a master T_1 table, and differentiated between:

- T_1 Structural–Policy/Platform: institutional rules, infrastructures, funding mechanisms, regulatory arrangements, platform design.
- T_1 Cultural–Policy/Platform: normative expectations from policy, platform rationalities, platform entrepreneurial imaginaries.
- T_1 Structural–Rural Community: local infrastructural constraints, local institutional governance, market access arrangements
- T_1 Cultural–Rural Community: local norms, meanings, preferences, commerce practices.

7.2.2 Secondary Re-coding onto T_1 and T_2–T_3

Following the two-stage coding illustration of the elite interviews above, a similar second-stage coding is applied to the remaining data sources to recode

primary themes, desk findings, and emic coat descriptions onto Archer's morphogenetic framework of T_1 (Structural Conditioning) and T_2- T_3 (Social Interaction). These sources enabled triangulation between top-down perspectives (platform and policy), bottom-up realities (ethnography and PD), and intermediate enactments (hub managers and implementers). Below is an exert of the coding process for these datasets:

	T_1 Structure – Policy/Platform	T_1 Culture – Policy/Platform	T_1 Structure – Rural Community	T_1 Culture – Rural Community
Sources	Theme	Theme	Theme	Theme
Ethnographic Data	English-based platform user-interfaces as barriers to RME	Lack of locally contextualised training models and outreach mechanisms	Lack of basic infrastructure (road access, internet connectivity)	Cultural norms of trust-building through repeated face-to-face interaction Reliance on multi-sensory cues (smell, touch, taste) for product evaluation
Participatory Design Workshop	Absence of offline-to-online integration	Lack of recognition for informal product quality verification		In-person selling as the default interactional mode
Mapping Study (Desk)	Federal & State initiators/implementer objectives and logics Target groups concentrated on entrepreneurs (ES)	Start-up/ innovation bias in DEI language		

Table 7.3 – Extract of secondary coding of ethnographic data, PD workshop data and mapping study onto the T_1 Structural and Cultural conditioning. Full list in Appendix E.2.3.

Similarly in T_2–T_3, the social interaction of RMEs with the structural and cultural conditionings of T_1 are analysed by mapping the primary emic and themes from the ethnographic data and participatory design data onto the T_2–T_3 process. This allowed for systematic comparison across perspectives, revealing where structural or cultural logics aligned or clashed.

Source	T_2 Social Interaction	T_3 Outcome
Ethnographic	Attempts to onboard onto DM platforms disrupted by digital literacy, English interfaces, and perceived risks.	Failure or postponed digital platform use, despite being interested.
	RMEs voicing neglect and dissatisfaction with platforms that are not directly contactable.	Rejection of platforms after negative experience
Participatory Design Workshops	Appropriation of interactional features (videos, direct message functions) on messaging applications for digital selling	RMEs continue to adopt seller-first platforms like Facebook and WhatsApp as culturally relevant and legitimate forms of digital selling.
		Re-appropriate WhatsApp features to recreate low-fidelity interactional 'marketplaces'

Table 7.4 – Extract of T_2 Social Interaction coding that was primarily drawn from ethnographic and PD workshop data.

7.2.3 Thematic Analysis

Upon arriving at the secondary codes of each dataset that were mapped according to the M/M sequence, thematic analysis was applied to aggregate the codes into sub-themes. During this process, some codes were dropped due to duplication or marginal relevance. The retained codes were then condensed into higher-order thematic clusters, which helped surface patterns across datasets. For example, codes pointing to unstable connectivity, inadequate logistics, and location of support hubs were grouped under infrastructure gaps. Similarly, references to KPI-based selection of "capable" sellers and to the promotion of start-up culture were streamlined into themes of Platform Formalism and Cultural Mismatch.

These aggregated themes in both T_1 and T_2–T_3 provided the foundation for contrasting structural conditionings with social interaction, allowing the analysis to tease out tensions and mismatches that explain the outcomes of disengagement. The data analysis process is summarised in Figure 7.1 below:

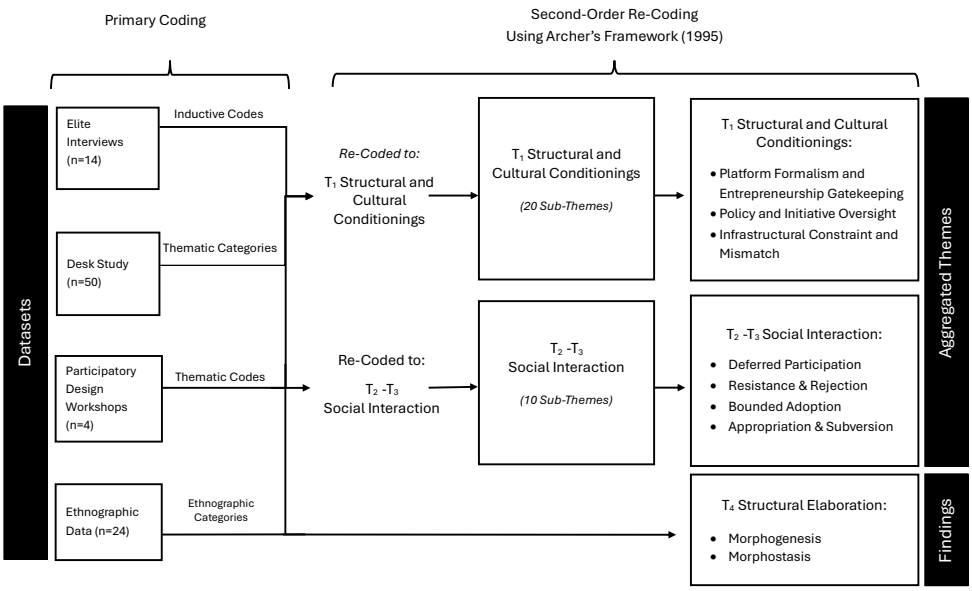


Figure 7.1 – Data analysis process illustrating the primary and secondary coding from datasets (on the left) to aggregated themes (on the right) across the morphogenetic framework.

Throughout the process, codes and themes were compared with concepts from platform studies, subsistence marketplace, digital inclusion, and Archer's morphogenetic framework (Chapter 2). This iterative dialogue between data and theory sharpened the explanatory power of the analysis, ensuring that mechanisms were not inferred arbitrarily but through abductive, retroductive, and retrodictive reasoning in line with critical realist methodology (Rickly and Canavan, 2024).

While Archer's framework structures the analysis temporally, the analytical process that guided the movement from empirical observations to explanatory accounts followed the three logics of critical realist inquiry (Bhaskar, 1978). The analysis moved between abduction (re-framing empirical observation through theoretical concepts), retroduction (asking what must hold for these practices to persist), and retrodiction (checking candidates against historical and comparative evidence). This analytical process ensured that the lived realities of RMEs were 'taken seriously' (Bong et al., 2025), preserving emic intelligibility while yielding causal, temporally sequenced explanations.

Table 7.5 – List of sub-themes and aggregated themes generated through the morphogenetic sequence thematic analysis.

Morphogenetic Sequence	Sub-Theme	Aggregated Theme
T_1 Structural Conditioning	Literacy-dependent platform onboarding	Platform Formalism & Entrepreneurship Gatekeeping
	English Interface & UX accessibility not tailored to RMEs	
	Platform focus on GMV as KPI, capable-seller bias	
	Platform expectation of product readiness & standards	
	Platform-centric governance	
	Normative entrepreneurial culture on DMs	
	Fragmented initiative implementation in digital entrepreneurship programmes	Policy & Initiative Oversight
	Training & post-support gaps	
	Hubs & PEDi as partial enablers	
	Startup and innovation bias in policy and programming	
	Technopreneur-first policy narratives	
	Tech-centric infrastructure of community digital hubs	Infrastructure Constraint & Mismatch
	Basic infrastructure gaps in the rural	
	Logistical and geographical provision of support infrastructure	
	Lack of relational & trust-based support with incubator infrastructure	
	Cooperative / collective business logics not accounted in support programming	
T_2-T_3 Social Interaction	Attempts to engage disrupted by accessibility and infrastructural challenges	Deferred Participation
	Mediation & Intergenerational Digital Support	
	Trust Erosion among early adopters	Resistance & Rejection
	Collective caution of Formal Marketplaces	
	Informal and cooperative workarounds	Bounded Adoption
	Selective & Pragmatic Platform Use	
	Normalisation of informal channels	
	Sensory misalignment & representation failures	Appropriation & Subversion
	Legitimisation of hybrid commerce practices	
	Marketplace as a relational and social space	

In the final analytic stage, the T_4 outcomes of largely disengagement were evidenced and rearticulated from the ethnographic data, which form the premise of this chapter's investigation. Despite the outcome being largely morphostatic, the morphogenetic tendencies were nonetheless identified and described in detailing the potential for change. These tendencies included the emergence of a local relational platform or the decentralisation of training through PEDi centres, and morphostatic reproduction, such as the persistence of KPI-driven logics and formalist platform design. These outcomes were traced back to the mechanisms surfaced earlier, allowing a fuller account of continuity and change.

7.3 STRUCTURAL AND CULTURAL CONDITIONING (T_1)

Following the morphogenetic framework, this section starts by describing the structural and cultural mechanisms that were arrived at through the CR method of retroduction, based on the data collected, which offers the greatest explanatory power (Rickly and Canavan, 2024). At the T_1 stage, the analysis focuses on the structural and cultural mechanisms within DM platforms, local policies and initiatives, and existing infrastructure. Findings in T_1 primarily drew from elite interviews with platform executives, policymakers, government executives and initiative mapping from the desk study, triangulated with findings from ethnographic fieldwork and participatory design workshops.

7.3.1 Platform Formalisms and Entrepreneurship Gatekeeping

Structural Conditioning

From this structural standpoint, existing DM platforms in Malaysia are underpinned by formalist logics of commerce that privilege universal, scalable, and efficiency-driven design (Bong et al., 2025). As explored in the last chapter (see Chapter 6.3), this predominantly WEIRD-based design logic facilitates scaling and efficiency but constrains relational and multimodal exchange (Hobbis & Hobbis, 2022).

Even from a usability perspective, platforms that champion rural sellers were found to have English-only interfaces. Explaining why localising 'design' has not been given more priority, one platform owner cites the lack of 'capacity' while juggling more pressing priorities such as sales growth:

> *"We can't do that (platform design) with a lack of capacity…What I want most (at this point) is customers. It's simple. I need a system that can bring more customers. So this year we will be focusing on sales."*
>
> – CEO of T Platform

Platform design aside, existing platforms implicitly hold certain expectations of their users: entrepreneurs that possess baseline digital literacy, reliable connectivity, and the capacity to perform standardised e-commerce processes (i.e., account setup, digital-store management, product cataloguing, digital payments, nationwide shipping, etc.) that are formalised and aligned with the platform's procedures. In practice, these criteria tend to function as selection filters, privileging sellers with digital capability while making participation more difficult for those less digitally engaged.

> *"It is not the platform's responsibility (to support rural micro-enterprise). The platform's role is to provide sellers with a platform to sell. It's like opening up a mall to provide the space for sellers to sell. What they need to do is follow the rules and regulations of the platform, and the policies we set out for how they operate… If I find 10,000 sellers who sell the same product, there will likely be 10% who know how best to market it best, and the others will follow. Why should we spend our resources to support the 9,000 that do not know how best to sell?"*
>
> - Account Manager of TT Platform

As illustrated by an account manager of a major DM platform above, the DM's contribution is in the provisioning of a transactional platform, while the role of support and inclusivity is deemed to be beyond the scope of their responsibilities. This structural framing conditions a situational logic of partial exclusion, where those with certain capabilities are better positioned to benefit. This represents an *entrepreneurial gatekeeping* mechanism where the platform pre-structures entrepreneurial opportunities, thereby privileging certain entrepreneurial pathways while marginalising others.

Most established platforms typically have a system of support in place for platform sellers, especially during the initial stages of expansion when a platform is introduced into a new region. As in the case of our interviewees, this support, where account managers were assigned to hand-hold sellers, began to dwindle as platforms gained popularity. Instead, account managers are incentivised by KPI frameworks tied to gross market value (GMV), a key measurement of value brought to the platform by sellers. This structural mechanism, in turn, allocates support toward high-revenue sellers, while lower-revenue RMEs are deprioritised. As one manager explained:

> *"We will base our support on their monthly or yearly sales…Typically, we would take care of sellers with higher revenue…We each have our own sales targets to hit every month… We don't want to waste our time on sellers who can't help us hit our targets, so we have to let them go."*
>
> - Account manager of L Platform

This structural conditioning that aligns support with commercial viability reinforces the barriers for sellers with products of smaller profit margins or of lower turnover volume, typical of RMEs. This commercial prioritisation mechanism extends to wider DM stakeholders including the "enablers" (third-party firms that support MSMEs onboarding and management of DMs for a fee):

> *"We actually don't target these more rural or small businesses. This is purely because we're focused on the long term, and we want to optimise our staff to maximise our ROI. So, my company doesn't go after these smaller companies or brands."* - DM Enabler Executive

In summary, these existing structural condition mechanisms influence how RMEs interact with DM platforms. These mechanisms reflect specific logics of formal commerce, which facilitate certain entrepreneurial routes while restricting others. Thus, it creates structural mismatches between platforms and rural enterprise realities before RMEs even encounter and interact with DM platforms.

Cultural Conditioning

Culturally, platform actors promote an entrepreneurial model rooted in traditional Schumpeterian and Kirznerian ideals of innovation, self-sufficiency, and alertness (Song, 2019; Paredes-Frigolett & Pyka, 2022). Platforms' framing of sellers tends to expect them to be highly motivated, digitally skilled, and individually responsible for acquiring the necessary skills, while remaining constantly aware of shifting e-commerce trends to stay profitable. Platforms consequently tied their business model around sellers' performance, providing more support to those that generate larger income which thereby facilitates more commission earned by the platform, as explained by one manager.

> *"The core mission, of course, is that we hope to help sellers and brands grow. This is because once a brand gains popularity, our commission from their sales will grow too. So that is how the company (L Platform) makes money…"* - Account manager of L Platform.

This cultural framing encourages a form of *entrepreneurial gatekeeping* that tends to prioritise a particular type of platform entrepreneurs – those that are entrepreneurial 'hero' (Schumpeter, 1934) who innovates and scales, or those who are highly alert to market gaps (Kirzner, 1973) are typically privileged and more likely to be groomed through the support mechanism, while relational or subsistence-oriented practices more typical of RMEs are sidelined or 'let go'.

> *"From the platform's perspective, we would really have to let go of those that are not performing… in order for us to meet our sales targets"* - Account manager of L Platform.

Aside from a mismatch in entrepreneurial models, Chapter 6 has also shown that existing DM platforms are WEIRD in multiple ways. These WEIRD-based cultural logics often follow a Western template, and neglect numerous local means of commerce, including the interactional, social, communal and relational aspects of commerce. Echoing with Archer's term, DM platforms have pre-scripted ways of use (Bong et al., 2025) that align with a WEIRD-based logic (ie, text-based, assumption of connectivity and literacy, minimal

interaction, etc.). The design approaches adopted by platforms, often assume knowledge of users and are less participatory. In the case of the local platforms in Sarawak, one of them contracted their platform development to a developer in India, while the other build them through a West-based template they confessed as 'copying-and-pasting'.

In Archer's terms, the situational logic is one of necessary incompatibility, where Schumpeterian ideals clash with RMEs' logics that lean towards subsistence entrepreneurship, which are less growth-centric and market-driven (Song, 2019; Chamberlain et al., 2013; Paredes-Frigolett & Pyka, 2022), but more dependent on local networks and more inclined towards sufficiency. This clash of logics conditions exclusionary tendencies, legitimising those who can perform and conform, while rendering others marginal or less "viable".

7.3.2 Policy and Initiative Oversight

Structural Conditioning

From platform conditioning, this chapter now moves to the wider policy landscape within which DM platforms and RMEs are situated. Malaysia's sustained investment in the digital economy has produced a dense array of national and state-level initiatives. In Sarawak, numerous agencies and NGOs have promoted digital entrepreneurship, often positioning DM technologies as vehicles for RMEs to "join" the digital economy (Sarawak Digital Economy Strategy, 2017). Despite the strong efforts, structural bias persists, with targeted efforts towards RMEs empirically shown to be overlooked (as detailed in Chapter 4).

Policymakers themselves acknowledge initiative saturation and fragmentation, resulting in overlapping programmes that compete for similar beneficiaries, while others, such as RMEs, remain underserved. As shown in the vignette below, a national policy-maker executive expressed concern

about 'leaving out' certain target groups due to a lack of initiative coordination at the national level.

> *"There will be overlap... every ministry, every agency that is involved with society or entrepreneurs are going towards digitalisation. Yes, there is much confusion... The problem is, everyone is coming up with their own programme. There are many target groups and many agencies. So I won't discount that there will be some who will be left out..."*
>
> – Policy-maker interviewee

Our desk study reveals a notable lack of support for RMEs in financing initiatives, as most funding is directed towards tech-based start-ups (Chapter 4.2). This is backed up by government-backed venture capital institutions, which confirm they are only interested in funding '*technology-based companies'*, considering the support of rural enterprises to be outside their scope and the responsibility of social enterprises. As illustrated in an advert for DEI below, the digitalisation initiatives named '100 Go Digital' epitomise how existing DEIs privilege more formalised, growth-oriented firms, while indirectly conditioning the exclusion of RMEs.

Geographically, these initiatives cluster around urban centres, distant from rural communities. Entrepreneurial "hubs" and incubators are thus structurally challenging for RMEs to access, contributing to a situational logic when exclusion frequently occurs. Despite being encouraged to "go digital", RMEs find these institutional scaffolding spatially and socially challenging to access.



Figure 7.2 – A sample of a digital entrepreneurship initiative that supports 'traditional businesses' to transition towards digitalisation, but only targets those within *F&B, retail, services, logistics and professional services*, implicitly signalling the search for scalability and formalised businesses.

Finally, elite stakeholders also describe frequent shifts in political leadership as causes of policy discontinuity, producing uncertainty and wastage that impact consistency and credibility of DEI for participants. Thus, despite numerous initiatives, the combined conditioning of fragmented initiatives, target group oversight, urban bias, and policy shifts contributes to a systemic pattern of neglect of RMEs.

Cultural Conditioning

Within Sarawak, there is a strong sentiment of looking to the West as sources of knowledge and models of success. This is illustrated through the benchmarking of Western models in the design of key digital policies in Sarawak, as a means of 'leapfrogging' into the digital economy. The *Sarawak Digital Economy Strategy 2018-2022* (Sarawak Digital Economy Strategy, 2017), explicitly named study visits to Australia, Finland, Estonia, Germany, France, and China to inform the strategy blueprint design, while publicly

citing Estonia as a celebrated model for Sarawak to follow in its digital transformation.

> *"In our search for a practical digital strategy for Sarawak, we visited a few countries particularly Australia, Finland, Estonia, Germany, France and China. The biggest lesson we learnt is that digital economy is not merely about the frontier of digital technology, but also ideas about how society can be organised more efficiently while protecting personal information and privacy…Going 'digital' is now a global trend, and Sarawak should also be involved in it..."(SDER 18-22, p.2)*

The Western-centricity in policy making and governance is strongly shaped by, and can be contextualised within Sarawak's colonial roots, with a century of Brooke rule (1841 – 1946) followed by British crown-colony administration (1946-1963). An enduring legacy is the privileging of the English language in official administration in Sarawak, constitutionally retained after independence and still co-existing with Bahasa Malaysia in the state's apparatus. The linguistic continuity demonstrates the persistence of colonial pathways through which Western-centric models of modernity are legitimised and reproduced.

The policy legacies rooted in postcolonialism condition policy imaginaries toward techno-solutionist scripts of the digital economy. In the M/M process, such policy borrowing constitutes T_1 cultural-system conditioning. It pre-defines the parameters for what 'innovation', 'entrepreneurship' and 'digital economy' are, often with a Western-centric interpretation, before actors encounter them in situ. The *Sarawak Digital Economy Blueprint,* which is the key digital policy for the state, illustrates this narrowing of meaning by equating entrepreneurship with technology-based ventures, emphasising start-up culture and technology transfer. Within these cultural scripts, RMEs are positioned primarily as passive adopters of e-commerce, a structural conditioning in itself, rather than as legitimate entrepreneurial actors in their own right.

This framing cascades into programme design, including the establishment of 'innovation hubs' in each division to *'inculcate the culture of innovation'* and *'increase the number of successful technopreneurs'* (SDER, 2017, p. 28).

This reflects a broader development discourse wherein modernity and progress are equated with *technopreneurship.* This perspective tends to celebrate start-up culture and its range of hackathons, incubators, and pitching competitions, framing digital entrepreneurship as the realm of young, digitally savvy, urban, and English-speaking innovators (Irani, 2015). Digital hub managers, however, reported difficulty meeting KPIs in rural towns where few technology start-ups exist:

> *"We have not found any yet here, but we have to find one (technopreneur). Our vision is to teach 1000 participants through our digital workshops to produce at least one tech start-up".* – Digital Hub Manager, Rural Town

The fixation on technopreneurs due to policy focus sees tech-entrepreneurs as more valid in the broader digital economy, resulting in the diversion of resources, including digital hubs, training and incubation programmes to the development of tech start-ups, even in rural towns.

These expectations embody a cultural logic that contradicts local entrepreneurial realities. Rural business activities, such as selling farm produce or home-made goods in local markets (examples in Chapter 5) are often culturally devalued in these narratives. RMEs that fail to align with start-up norms, such as pitching or investor-readiness, or have elements of 'digital' within their existing model are tacitly framed as 'lacking' or 'unwilling to learn'.

Thus, postcolonial policy legacies and the circulation of Western-centric development scripts condition Sarawak's digital economy discourse in ways that tend to privilege technopreneurs and start-ups as the archetype of entrepreneurial modernity. RMEs that operate through different cultural and economic logics, hence encounter and perceive digital initiatives and marketplace platforms as exclusionary spaces ill-suited to their everyday business realities (explored more in T_2-T_3).

7.3.3 Infrastructural Constraint and Mismatch

Structural Conditioning

The infrastructural realities of rural Sarawak have a crucial influence on how RMEs engage with DMs. Basic services such as reliable internet connectivity, electricity, and road access remain inconsistent across many rural sites, as detailed in Chapter 5. Unstable internet connections often prompt sellers to work around these constraints through a host of ways. An example includes the use of asynchronous communication through WhatsApp, where messages can be read when connectivity permits.

Similarly, inadequate road networks and delivery infrastructure, alongside existing high delivery fees, constrain the accessibility of e-commerce use, and in some cases render it practically unfeasible under current models. In some communities, even electricity remains intermittent, further impeding the use of digital devices central to DM participation. This reflects what Bowker and Star (1999) describe as the classificatory nature of infrastructure, where the availability and accessibility of enabling infrastructure to classify and strongly influence who is included and who is excluded.

These constraints are well recognised by elite stakeholders, some of whom advocate for the development of locally grounded e-commerce platforms better tailored to the rural realities in Sarawak. For instance, the absence of standardised postal addresses in longhouse communities presents significant structural barriers for logistics.

Cultural Conditioning

Moving to the cultural perspective, attempts to bridge infrastructural gaps through state and federal-led initiatives have often reproduced cultural exclusion. As advocated by Star (1999), infrastructures are not neutral backdrops but socio-technical systems, meaningful only in relation to the communities that use, or resist them (Star & Ruhleder, 1996).



Figure 7.3 – (a) (b) The digital hub located in a rural town, furnished with working stations, ideation spaces and meeting rooms for the use of local entrepreneurs, juxtaposed against, (c) the community hall in Long Semadoh, where local communities, majority subsistence farmers, gather for communal activities.

In Sarawak, the cultural logics embedded in infrastructural provision reflect a technocentric vision of development, often privileging "world-class" facilities and start-up environments over locally resonant forms of support that are accessible and grounded. As Graham and Thrift (2007) argue, infrastructures often carry spectacular imaginaries of progress, operating as symbols of modernity as much as functional systems.

The establishment of Digital Innovation Hubs and Digital Economy Centres (PEDi) across Sarawak exemplifies this. Equipped with internet access, modern working spaces, and a suite of top-down training programmes, they served as aspirational showcases. While they may arguably serve certain

forms of entrepreneurship, their homogenised implementation in rural towns often fails to align with local RMEs' everyday needs and practices.

> *"My concern for Sarawak is how to get the masses to participate. You may put the infrastructure, of course, the final 3 per cent of the coverage is a bit tough, but if you manage the majority that has access to infrastructure, I think it should be there, but the keyword is acceptance by the public."*
>
> *- Policy-maker Interviewee*

As the policymaker above described, the provision of infrastructure should go hand in hand with public engagement to increase awareness and buy-in from the public. In reality, the implementation of digital policies is often heavily techno-deterministic. New technology rollouts are often 'forced' on the population to achieve a critical mass of adopters, thereby, in that logic, would encourage the rest of the population will 'catch up' (Rogers, 2003). Despite policymakers emphasising the need to provide 'options', translated as 'choice' to the public, he admits that implementing stakeholders often choose more heavy-handed approaches believed to be necessary for technology adoption:

> *"In West Malaysia, we have tolls (on highways). The public used to have three options: SmartTAG, Touch 'N' Go and RFID. In July of 2021, the authorities decided to go 'cashless', and everyone is forced to adopt e-payments. Government agencies like to quote this example for the need to force society (to adopt technology through regulation). "*
>
> *- Policy-maker Interviewee*

These infrastructural constraints and mismatches undermine the practical feasibility of digital commerce in rural contexts. As a result, RMEs often perceive both digital initiatives and digital commerce as distant, irrelevant or designed for others, further discouraging meaningful engagement.

Summary of T_1: *Structural and Cultural Conditioning*

Taken together, the analysis of the structural and cultural conditioning at T_1 is summarised through the three key areas of (1) platform formalism and entrepreneurial gatekeeping, (2) oversight in policy and initiatives, and (3) the infrastructural mismatches. Through these three areas, a series of

structural and cultural conditionings prefigure RMEs' encounter with DM platforms, which include:

- Platform entrepreneurial gatekeeping and commercial prioritisation
- Platform WEIRD scripting that contrasts with rural commerce
- Techno-centric entrepreneurial emphasis and policy borrowing
- Infrastructural mismatches with realities of rural entrepreneurship
- Techno-determinism of digitalisation initiatives

As Archer emphasises, these conditionings do not determine behaviour, but prefigure and influence the contexts of action in which RMEs operate (Archer, 1999). The next section examines how RMEs, positioned within these structural and cultural conditions, respond through their everyday practices and social interactions.

7.4 SOCIAL INTERACTION (T_2–T_3): RME AGENCY WITHIN STRUCTURAL CONDITIONINGS

From outlining the cultural and structural conditions within which RMEs encounter DM platforms in T_1, we now turn to the domain of social interaction in (T_2–T_3), where the actual practices and interactions of RMEs with DM platforms are examined, given the conditioning described above. The study revealed that RMEs did not simply acquiesce to the structural and cultural push. Instead, they exhibited a range of responses, from resistance to selective adoption to creative adaptation as they navigated the DM landscape.

This section will begin with the analysis of RMEs' interaction with support structures such as training and capacity building for DM engagement (7.5.1 and 7.5.2), followed by the interactions with conventional DM platforms (7.5.3), and wider digital platform interactions (7.5.4 and 7.5.5).

7.5.1 Deferred Participation

Elite stakeholders of digitalisation initiatives often cast RMEs as unwilling or disinterested in learning to use digital tools, sometimes even jokingly framing them as 'lazy to learn'. Despite this, RMEs would often describe their current

disengagement in terms of 'not yet' rather than refusal, while repeatedly expressing keenness to learn, particularly 'if someone were to teach' them. At T_2, the local willingness to learn continually encounters the structural and cultural conditions that constrain their agency to take action effectively. This constitutes a demi-regularity or interactional patterns of *deferred participation*, where agency is exercised through expressed postponement, without an outright rejection.

Access to training opportunities is a significant barrier identified by RMEs. The participant vignette below epitomises the sentiment of RMEs towards accessing digital training programmes.

> *"Yeah, I mean, every year, the NGOs and government (agencies) say there's a lot of programmes. I actually laugh. If you say there's a lot, where? Give me! Seriously, I feel left out you know."* - Nathan, 30's, Padawan

Our T_1 analysis revealed that this sentiment extends beyond anecdotal, highlighting how gaps and oversights at the initiative level (Chapter 4.2) impact RMEs' accessibility to capacity-building programmes on the ground.

Aside from challenges in seeking training opportunities, RMEs also face difficulties in attending available ones, which are mainly clustered in urban centres. Balancing various roles in both formal and informal work, along with childcare and family responsibilities (as seen in Chapter 5.1), makes finding time for training workshops a significant challenge.

The keenness for accessing training is juxtaposed with the very infrastructure that is set up for rural communities, such as the Digital Economy Centres. RMEs do not access these immediate facilities despite their keenness to learn, seeing these facilities and the training programmes as designed for 'others' with more formal businesses. This mismatch in expectations has left many of the facilities underutilised or repurposed as study spaces for children. In this sense, infrastructure becomes visible precisely in its breakdown and misfit (Star, 1999).

RMEs acknowledged their existence but regarded them as only for 'larger businesses' and not for micro-entrepreneurs. It is seen here that even when initiatives are within proximity of RMEs (Figure 7.4), the cultural and structural mismatch between governmental-run training programmes deemed too formalistic, along with infrastructural spaces that do not resonate with the local setting, impacts RMEs' effective exercising of agency in accessing them.



Figure 7.4- (a) (b) 'Digital Economy Centres' (PEDi) in Bawang Assan, equipped with computers, internet connectivity, and training courses to promote digital entrepreneurship, situated close to, (b) an RME and her micro-business, located a 10-minute walk away, yet have not accessed any training at the PEDi despite their desire to upskill.

For the few who did engage with formal programmes, their attempts to comply to existing training often revealed a gap between learning and practice. At T_2, participants described how the often abstract knowledge delivered in training could not easily be translated into their everyday entrepreneurial contexts, where poor connectivity, lack of equipment, and culturally distant content limited their ability to act on what they had learned.

> *"Yes, I have attended training before. But I felt like it wasn't enough. I want more…My main challenge is that I lack practice…because back here, there is no internet coverage."* - Melinda, Tourism RME, Padawan

Additionally, programmes focusing on start-up models and digital literacy (including digital equipment) limit RME's ability to effectively implement what they learn, as an RME states below.

> *"I have attended a few training courses for indigenous micro-entrepreneurs organised by the Dayak Chambers ('Indigenous Chambers of Commerce'). However, the training needed us to have a laptop and I don't have one, so I can't apply what was taught once I came home."*
> - Noel, Snack RME, Padawan

The RMEs above demonstrated willingness by attending and attempting to follow the prescribed programmes, but the training's underlying assumptions of stable internet, personal laptops, and start-up-oriented literacy were often misaligned with their lived realities. Even hub managers acknowledged the cultural clash, as in the case of teaching rural sellers to memorise a pitching script for practices that had little resonance with their agricultural livelihoods:

> *"It was difficult for us to train…non-digital businesses to do pitching... They do seed planting (business) you see… They are new to the 'digital', plus they are from the rural areas. They don't know what pitching is… We did teach them to memorise (a script) as they (even)struggle to explain what their business is."*
> *- Digital Hub Manager, Rural Town*

Policy and initiative programmes operated on the assumption that the provision of training (a structural condition) would automatically produce new entrepreneurial behaviours. However, structural barriers such as poor connectivity, equipment scarcity, and cultural misalignment counteracted these provisions. This illustrates a demi-regularity of *ineffective compliance*, where agents attempt to follow structural and cultural scripts, but the misalignment prevents the intended outcomes from materialising.

7.5.2 Resistance and Rejection

While some RMEs remain eager but constrained, others have actively resisted or rejected participating in DMs. Our previous chapters have described the various ways in which RMEs push back on DM platforms, which include

abandoning the platform after some time or outright rejection of them (Chapter 5.5.4). These demi-regularities of resistance and rejection demonstrate the active exercise of agency among RMEs, both at an individual level and collectively.

As platform companies expanded into rural Sarawak, food vendors, accommodation providers, and small product sellers initially participated. However, during the researcher's fieldwork, many have rejected these platforms, citing neglect, lack of support and platform practices that undermine their control. For some, rejection stemmed from breaches of trust, such as unilateral marketing decisions, delayed and inaccurate payments, or hidden costs.

> *"Let me share with you my experience with A Platform, I find it quite dangerous… They will make offers to customers that they did not discuss with you. For example, our price for one night is RM280, but they will drop it to RM30 without my consent."*
>
> - Abdul, Accommodation RME in Rural Village

Others disengaged because platform participation proved financially unsustainable. Nathan, for example (from Chapter 5.1), a digitally skilled entrepreneur with an IT background stopped using two major platforms, and later quit all platform activity after recognising the precarious profit margins caused by high competition, courier costs and listing requirements on DMs:

> *Nathan stopped using L platform, which requires at least 10 items listed, and the S platform, which has high taxes and courier costs. Conventional logistics that require getting products to the post office and paying courier fees are also challenging. Nathan often absorbs the hefty delivery costs to stand out from competitors, but the final margins of profit within such highly competitive spaces eventually disincentivised him from continuing.*
>
> *- Fieldnotes from Padawan, 2024*

Despite the platform and policy narrative, as well as scholarship on the platform economy being an enabler to income diversification and employment generation, the capabilities and capacity required to operate within an open online marketplace are often underestimated, both in digital

capabilities and entrepreneurial skills (Yap et al., 2020; Kunjuraman and Hussin; 2017). This is further exacerbated by the additional logistical costs incurred due to RMEs' physical distance from distribution centres and postage services.

At T_2, RMEs is observed to be actively engaged in rational disengagement as they carefully weigh the costs of participation against benefits and withdraw when platforms undermine trust or viability. This is compounded by the collective caution that is observed among the network of RMEs, where negative experiences circulate, producing a wider culture of scepticism towards platforms. Their decision to withdraw, hence, is not interpreted as a failure but as a rational disengagement. This reaction was described as being 'hurt' by a local DM platform that entered the market later than other mainstream platforms.

> *"I can say most of them (sellers) are hurt by previous or existing platforms…These platforms promised them a lot, but the moment they were onboarded, they were abandoned…."*
>
> - CEO of B Platform, Local DM Platform

The disparity in platform scalability, where growth is prioritised over care and collaboration with local RMEs, has consequently elicited resistance towards DM companies that have not sufficiently sensitised themselves to the needs of smaller players. This shared resistance exemplifies Archer's situational logic (Mutch, 2020), where structural invitations fail to align with local concerns, leading to individual and collective rejection. This illustrates a T_2 interaction where RMEs reflexively reject platform logics and instead sustain commerce through culturally resonant practices.

7.5.3 Bounded Adoption

Through the PD workshops in Chapter 6, RMEs who participated have exhibited clear preferences for platform choice. As opposed to being just 'unaware', the workshop outputs show that RMEs articulated clear preferences of certain DM platforms, or digital technology platforms in general, over others (as shown in Chapter 6.3 and Chapter 6.4.2).

From our findings, RMEs do engage digitally but not through conventional DM platforms. As seen in Figure 7.5, their preferences based on lived experience showed that actors actively chose familiar platforms, predominantly Facebook and WhatsApp, as a platforms for conducting commerce, even when presented with more specific platforms that are within their business domains (such as *Agoda* for accommodation, and *Shopee* for packaged goods).

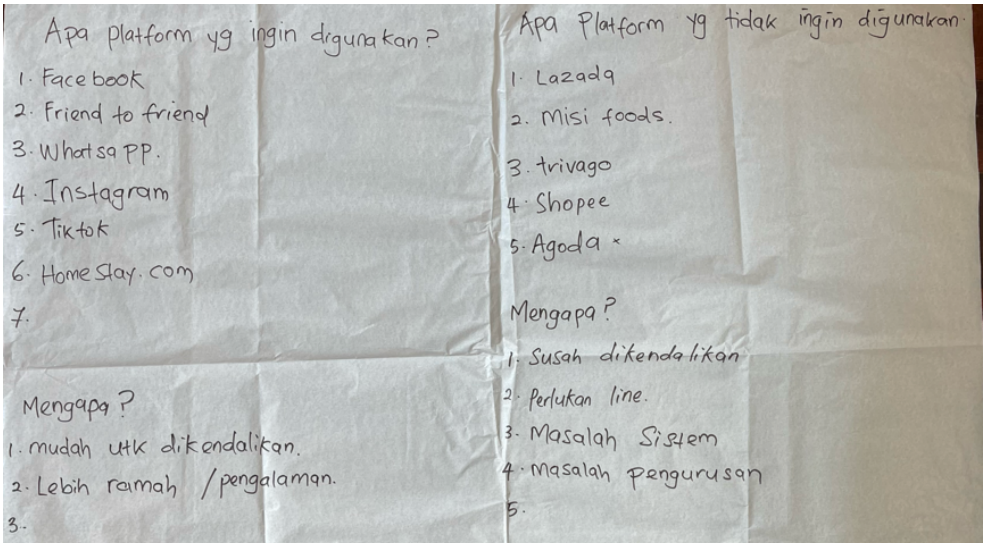


Figure 7.5 – Workshop outputs in Padawan (2024) from one of the RME groups detailing the platforms that they prefer to use (left) and those that do not wish to engage with (right). Reasons for use and non-use included 'friendlier experience', 'system problem', 'management (platform) problem', signalling the misalignment of conventional platforms with the direct managerial preference that RME prefer, afforded by more generic platforms of their choice.

Faced with T_1 conditions of platform gate-keeping and WEIRD scripting in conventional DM platforms (identified in T_1), RMEs are faced with steep learning and compliance burdens, such as complex sign-up processes, a mandatory number of product listings, assumptions of high digital literacy, and GMV-conditioned support. These barriers render many more specialised platforms impractical for RMEs.

The active choosing of a generic platform can be attributed to familiarity, but as described by RMEs themselves, they rationalise that 'most people' are on Facebook as compared to other more niche DM platforms, and that juggling multiple platforms is burdensome, has a high cost of learning and is

unnecessary. Such strategies highlight the pragmatic reflexivity of RME and constitute the demi-regularities of *bounded adoption* (Simon, 1957; Simon 2000), where RMEs select platforms that have lower compliance burdens and reasonable network reach, even if these are not the most relevant platform for their business domain. What seems like non-adoption is a deliberate decision to avoid platforms whose demands, including cognitive, managerial, and relational aspects, exceed their perceived benefits.

At T_2, RMEs exert clear agency in navigating the various structural conditionings presented under the various governing regulations (i.e. the need to list at least 10 items on the L platform; agreeing to unsolicited promotions), and learning prerequisites (i.e., platform familiarisation; workflows; payment schedules), in choosing platforms that facilitate RMEs' own control, while aligning the most with their capacity and capabilities.

7.5.4 Appropriation and Subversion

The lack cultural fit in conventional DM platforms has led to abandonment by both sellers and customers, who instead appropriate and subvert mainstream logics by reconfiguring digital exchange through situated practices such as WhatsApp groups, Facebook promotion, and cash-on-delivery arrangements. As a Member of Parliament of one of the rural sites explained:

> *"Somehow, it doesn't really work here. I mean the system itself doesn't work for them… Yeah, I think it's not 'friendly' enough for them. They think it's too 'techy' for them. They prefer - just take the pictures and send them to a WhatsApp group, that's it. And people will start sharing their posts… Even if I want to order food, I will go directly and ask them to 'COD' ('Cash on Delivery'). That's how we do it here. They'll promote on Facebook or whatever platform, and if we want to buy, we call them directly".*
>
> - Member of Parliament of Rural Town

The appropriation of WhatsApp for conducting business, a common practice among RMEs in this study (illustrated in Chapter 5.3.3.), shows that RMEs are reflexive agents that utilise their capabilities to appropriate technology for their desired outcome of commerce. The use of WhatsApp captures both the

social and relational elements of rural commerce that RMEs are acquainted with, without the complex sign-up process and platform management capabilities of manoeuvring conventional DM platforms. The interaction element of utilising social and messaging applications also better align with real-world interaction compared to traditional DM, which restricts its interactional protocols (Chapter 6.4.2). This behaviour was widespread: our ethnography found that many rural sellers had learned to use WhatsApp or Facebook Marketplace through peer-supported ways, as these platforms are ubiquitous and in local languages.

Unlike the structured marketplaces, these channels allow flexible, conversational commerce, including voice messages to negotiate price, sharing photos of products in group chats, etc. In effect, rural entrepreneurs created their own DM on social media, sidestepping the formal e-commerce infrastructure. Here, subversion takes shape through the creative refashioning of digital technologies into locally resonant systems of exchange

RMEs' reliance on WhatsApp, communal trust, and informal markets are not failures but localised adaptations to infrastructural instability. Such strategies exploit the affordances of familiar platforms: low text literacy required (voice can substitute), personal trust can be maintained (buyers often known or referred), and low commission (often none, unlike marketplace fees). These agentic adaptations illustrate how rural actors bend technology to their context, even if it means operating outside the intended systems.

Amidst the resistance to conventional platforms, RMEs expressed curiosity and interest in TikTok as an emerging e-commerce tool. TikTok's 'shop-entertainment' model incorporates social networking and live-selling, which RMEs perceived as aligning more closely with rural modalities of trust and verification. The ability to observe a seller in real time, coupled with archived videos as proof of legitimacy, resonates with their everyday practices.

Our PD workshops reflected this, with wireframes that mirrored TikTok's features: live video selling, voice/video profiles, and direct buyer–seller communication (see Figure 6.12 and 6.13). This shows that RMEs are not

only appropriating but also articulating design imaginaries that prefigure alternative platform futures.

At the same time, RMEs acknowledged barriers such as personality and charisma, with some hesitant about recording themselves on video. Yet the clear emphasis on seller identity was evident. The clear importance of seller identity in the rural economy is demonstrated through a locally developed DM platform– ENTREM, developed by an RME that foregrounds sellers' backgrounds and stories before their products. Though ENTREM struggled to succeed as a platform, its design illustrates a striking subversion, a marketplace built around relational and seller identities, challenging the abstracted, product-first logic of conventional e-commerce.

Summary of $T_2 – T_3$: *Social Interactions*

Within the structural and cultural conditionings that pre-exist in T_1, many of which may not be known by RMEs themselves, actors exercised reflexivity in their engagement (and disengagement) with DM platforms through what that they perceived as feasible and pragmatic, what aligns or derails from their personal and collective values, and what could be resolved within the means and capacity at hand. When DM platforms arrive among rural communities, with training and digital literacy initiatives rolled out where RMEs are situated, four recurring patterns are observed across the rural sites: deferred participation, resistance and rejection, bounded adoption, and appropriation and subversion. These patterns show agency operating through deferral, compliance, exit, selection, and redesign. They establish the interactional foundation with structural and cultural conditionings, upon which the chapter now evaluates in terms of T_4 outcomes of stability and change.

7.5 T_4 STRUCTURAL ELABORATION: MORPHOSTATIS AND MORPHOGENESIS

The empirical pattern across sites was consistent with Chapters 5 and 6, in that conventional DM platforms remain marginal to rural commerce. Drawing together the findings from T_1 and T_2-T_3, the structural elaboration of is now outlined, which sets out how structural and cultural properties are elaborated or reproduced. Overall, morphostasis dominates, accompanied by pockets of morphogenesis wherein alternative, locally resonant commercial pathways consolidate as elaborated below.

7.5.1 Morphostasis of Exclusion, Oversight and Infrastructural Barriers

Platform Exclusion

The formalism of platform logic persists, illustrated through its GMV-measuring KPI's, WEIRD-centric design scripts, and the structural support that prioritises high-performing sellers. Simultaneously, the WEIRD-based design of platforms continues to presume seller independence, digital literacy, and platform acumen. By continuing in these standardised and formalised logics, DM platforms inadvertently disadvantage micro- or less digitally proficient entrepreneurs from engaging in the platform economy.

This disengagement, however, continues to be framed as digital or platform literacy gaps, rather than non-localised design, which is misaligned with the modalities and relational logics of RMEs. Hence, the formalised cultural conditions inherent in platforms are, in turn, perceived as neglect and abandonment by RMEs. These further breaches trust through platform negligence and high participation costs, resulting in negative platform experiences, which makes disengagement a sensible choice. These negative experiences are further diffused through local RME networks, generating collective caution among non-users and stabilising DM avoidance over time.

The T_4 *structural elaboration* of platform use hence, is one of morphostasis, whereby RMEs are subjected to structural and practical marginalisation of either failing to meet the formalist metrics, or being indirectly filtered out

through ‘market forces’, or RMEs’ decision to abandon. This results in the *elaboration* of DM exclusion, where RMEs who do not fit platform seller ideals remain peripheral, while their disengagement, in turn, legitimises the platform model of focusing on scalable sellers.

Policies and Initiative Oversight

From the exclusionary barriers within the platform domain, policy and initiative oversight in Sarawak is also seen to further elaborate RMEs’s disengagement from DM platforms and the wider digital economy. Technopreneur-oriented programmes, urban-centric programming and governmental initiative gaps for RMEs continue to shape RME’s accessibility for capacity-building in digital commerce. Training programmes continue to cluster in urban centres and valorise start-up culture, framing non-technology businesses – dominant among RMEs – as less viable for investments.

Despite a reflexive willingness from RMEs to learn and engage with DM platforms, meaningful participation is deferred as support structures, despite their proliferation and prioritisation in policy, remain distant, ill-fitted, and misaligned with RMEs’ everyday work and routines.

Despite the compliance of the small amount of RMEs that are able to access training, much of the programming remains centralised, with a lack of sensitising and grounding to local users. Assumptions of attendees having access to laptops and connectivity typify this misalignment, demonstrating the decoupling between the means and outcome of training provision. RMEs return from training unable to apply new skills, reinforcing perceptions of them as “unready” or “lacking.”

Overall, RME’s agency is expressed but constrained in its exercise, resulting in the continued non-use of formal DMs (morphostasis) and the under-utilisation of training hubs and digital centres.

Infrastructural Barriers

Infrastructure continues to impact RME's use of the DM platform. Intermittent connectivity and logistical gaps that result in additional last-mile costs continue to shape the feasibility and usability of e-commerce in rural areas. These connectivity and logistical barriers render the DM platform use impractical, which relies on stable connectivity and integrated logistic systems. In replacement, local RMEs make adaptation through routine workarounds at T4, through a range of locally coordinated arrangements such as COD, voice-based exchanges and *digital bricolaging* that better serve the practices and routines of rural commerce.

Concurrently, internet centres, as well as digital hubs built for providing digital literacy training, continue to be alienating with 'world-class' hub spaces tailored towards start-up companies. These settings unintentionally create distance for many RMEs, reinforcing perceptions that formal facilities as such are meant 'for others'. The *structural elaboration*, hence, is that infrastructural scarcity reinforces the morphostasis of formal DM use, whereas informal workarounds continue to organise everyday trade in rural Sarawak.

7.5.2 *Morphogenetic Glimpses*

Despite morphostasis being the main outcome, there are pockets of morphogenetic elaborations that emerged from localised adjustments, and signs of institutional learning and changes.

Platform Appropriation and Reimagination

Some RMEs adapted the e-commerce practices by simplifying digital processes through WhatsApp or distributing the process to external stakeholders such as customers or kin (explored in Chapter 5). These appropriations suggest that while domain-specific DM platforms remained underused, and formal training did not deliver its intended outcomes, RME continues to rework available resources into more locally resonant forms that

are based on informality and relationality. These locally negotiated attempts surface morphogenetic possibilities through the creative emergence of alternatives, from WhatsApp and Facebook repurposing and TikTok live-selling to ENTREM's identity-centred model (from Section 7.5.4) that revealed alternative trajectories for digital commerce.

Furthermore, the PD workshops with RMEs in Chapter 6 surfaced new possibilities on how DM platforms can be design. The wireframes produced through the various participatory workshops incorporated modalities natural to rural commerce (such as voice notes, market cries, videos of sellers) and made local practices integral within its feature design. These platform imaginaries, participated by DM platform executives themselves, points to morphogenetic potential for redesigning platforms moving forward.

Platform Adjustments

Building on the ideation of alternative DM platform designs, early institutional learning from DM platforms in Sarawak was also observed. The emergent collective caution and solidarity among RMEs against exploitative platform practices have led to some platforms rethinking their models:

> *"So I don't want to 'copy-paste', but I was there... 'Copy-paste', as I compete (with the other platforms)… The total defeat of Platform F (competitor) in Sarikei opened my eyes, you know, we cannot 'copy-paste'."*
>
> *- CEO of Platform B*

> *"This is something we really missed out, as we have never thought of including these (considerations) in our platform design.'*
>
> - CEO of Platform T, Participatory Design Workshop in Sibu

As illustrated in the vignettes above, a subset of platforms has begun to recognise these mismatches and express a willingness to revisit their models according to local needs, thereby generating morphogenetic potential. In sites where platform care is made visible for example, through accessible platform support, such as direct platform phone lines and dedicated support staff, sellers demonstrate greater willingness to re-engage.

Training Delivery Adaptation

In several locations, trainers and initiative implementers have begun to recognise the need to adapt their approaches to reach RMEs better. Particularly in demonstrating reflexivity of the under-subscription of RMEs in hub-centric programmes, and in the move to in situ delivery in rural areas. Hub managers have also begun to view grant pitching and script memorisation as ill-suited to RMEs, with smaller and more accessible funding models being expressed as more adequate for RMEs. Such reflexivity from initiative delivery actors offers potential for change, albeit a modest start.

Infrastructural Improvements

There are glimpses of broader infrastructural improvements, such as the construction of highway roads into remote areas near certain sites, providing a morphogenetic seed to the accessibility challenge of logistically moving goods from village to urban centres. A handful of internet centres in rural Sarawak have also experimented with providing spaces as a distribution hub, albeit on a micro-scale.

Summary of T_4

At T_4, morphostasis predominates as the outcome of the interaction between actors with pre-existing structures, with pockets of morphogenetic seeds where platforms, implementers, and infrastructures make coordinated, locally resonant adjustments.

The co-occurrence of WEIRD-based platform scripts, incentive structures that favour high-performing sellers, post-colonial policy imaginaries, technopreneur-oriented initiatives, urban-centred training provision, and logistics and infrastructural frictions intersect with RMEs' pragmatic work rhythms, relational and trust-based commerce, locally preferred interactional modalities, and available digital capabilities to produce a situational logic of necessary incompatibility.

<table>
<tr><th colspan="6">T_1: Structural Conditioning</th></tr>
<tr><td colspan="2">Platform Formalism & Entrepreneurship Gatekeeping</td><td colspan="2">Policy and Initiative Gaps</td><td colspan="2">Infrastructural Mismatch</td></tr>
<tr><td>Structural Conditioning</td><td>Cultural Conditioning</td><td>Structural Conditioning</td><td>Cultural Conditioning</td><td>Structural Conditioning</td><td>Cultural Conditioning</td></tr>
<tr><td>• Design for scale and efficiency
• Design without local modalities.
• Support based on GMV</td><td>• Schumpeterian and Kirznerian expectations on RMEs.</td><td>• Gaps in supporting RME due to fragmented initiative landscape.</td><td>• Western benchmarking in Sarawak's digital policy (e.g., Estonia model) that prioritises technopreneurs</td><td>• Infrastructural unevenness (postal addresses, patchy internet)</td><td>• Western looking hubs and training centre.</td></tr>
<tr><th colspan="6">T_2 - T_3: Social Interaction</th></tr>
<tr><td colspan="2">• Non-use, despite being keen.
• Rejection: Use but stop using.
• Reappropriating – by bricolage or by selective use
• Redesigning (ENTREM and PD Prototypes)</td><td colspan="2">• RME not engaged with initiatives – unheard of, heard of but feel not for them, or can't find them.
• RME required to pitch and struggling – compliance</td><td colspan="2">• RME learn but unable to practice due to infrastructure challenges.
• Managers unable to meet KPI, and going into the rural.</td></tr>
<tr><th colspan="6">T_4: Structural Elaboration</th></tr>
<tr><td colspan="3">Morphostasis predominantly</td><td colspan="3">Morphogenesis pockets</td></tr>
</table>

Table 7.6 – Summary of the Morphogenetic Analysis of T1, T2-T3, and T4 on the Disengagement of RMEs from Conventional Digital Marketplace platforms.

This configuration, therefore, yields recurring sequences of deferred participation, non-enactment, platform exit, and networked caution, reproducing morphostasis of disengagement. Incipient appropriation centred around low-burden, relational channels and the participatory reimagination of platforms offers potential for change.

It is worth emphasising that, despite the morphogenetic pockets mentioned above, these adjustments and adaptations are uneven and incipient. In themselves, they do not, or have yet to overturn the border morphostatic pattern of DM disengagement. Without sustained structural and cultural shifts, these isolated innovations would face significant resistance from prevailing configurations.

7.6 DISCUSSION

Upon analysing the morphogenetic sequence in the previous sections, this section returns to the research question of *why RMEs disengage from conventional DM platforms in Sarawak*. In line with the critical realist inquiry of retroduction (*what must be true for this to occur?*), the discussion section articulates the four mechanisms (the *real*) that best explain the empirically observed demi-regularities of RMEs' disengagement (the *empirical* and *actual*). These mechanisms are not generative laws as would be understood in positivist traditions, but are generative mechanisms bounded to the demi-regularities of a specific context. Hence, the mechanisms are therefore only generalisable to contexts that exhibit similar demi-regularities a. The following sections now describe the four generative mechanisms that best explain the disengagement of RMEs in rural Sarawak.

7.6.1 Disengagement Contingent on Alignment

The pattern of RMEs expressing willingness to learn but postponing engagement illustrates what this study conceptualise as a *contingent alignment* mechanism. Engagement remains latent, as agency is exercised through delay or 'waiting' until structural and cultural conditions are sufficiently aligned with local realities. In contexts where mobility is limited and learning is relational and dependent on immediate networks (Chapter 5, 6, Viswanathan et al., 2010), existing training initiatives for DM engagement remain difficult to access and culturally incongruent, rendering RMEs' engagement remaining only aspirational.

In cases of compliance, RMEs often fail to enact what they have learned, as training embeds the same structural and cultural assumptions of techno-centricity that is incongruent with rural realities that RMEs return to post-training. This mismatch means even when RME comply, such as attending and memorising scripts, these often remained insufficient to translate into actual practice.

This mechanism aligns with the design-actuality gap in ICT4D research (Heeks, 2002), where initiatives falter because embedded assumptions about

objectives, values, and technology are not grounded in the realities, values and routines of the users' context (Leonardi, 2011).

Similarly, in Science and Technology Studies (STS), analyses of scripts also critique how design inherently assumes specific competencies (Akrich, 1992). When these scripts and realities are misaligned, actors defer engagement or disengaged all together. Elite stakeholders' framing of RMEs as disinterested or lacking motivation obscures the causal role of structural and cultural misalignment and reframes systemic failure as an individual deficit. By contrast, the *contingent alignment* mechanism reveals deferred participation as a rational and reflexive strategy in cases of misalignment (Archer, 2003; Leonardi, 2011), thereby offering a more actionable explanation for disengagement.

7.6.2 Disengagement from Trust–Viability Threshold

The observed pattern of disengagement through resistance and rejection can be explained through a *trust-viability threshold* mechanism. RMEs who engage with DM platforms are seen to withdraw from them when the economic viability of engagement is no longer considered worthwhile (i.e., not meeting subsistence thresholds), and when trust is broken due to practices that do not align with local values (e.g., one-sided decisions on discounts).

The mechanism is active when several T_1 conditionals interact. The gatekeeping and commercial prioritisation mechanisms in platforms create participation costs, such as commission cuts, logistical cost and platform taxes that are less sustainable for RMEs with lower turnover. The platform's support structure prioritises high-value sellers for support through various marketing campaigns and additional seller schemes, further pushing RMEs out of the DM system. Additionally, the infrastructural challenges of courier fees and last-mile penalties further erode the margins of RMEs, who are already consumption-constrained (Venugopal and Viswanathan, 2015), making participation in DM platforms unviable, echoing the poverty penalty (Prahalad, 2004).

This reflects the subsistence threshold proposed by Viswanathan et al. (2010), which is when the cost of participation exceeds the subsistence threshold, disengagement becomes a logical choice. In these instances, survival and affordable loss take precedence over risky experimentation (Sarasvathy, 2001).

Culturally, the WEIRD-scripting mechanism assumes trust to be built through strong platform governance and digital security (Grabher & König, 2020), as opposed to relational trust rooted in credibility, reciprocity and reputation observed in rural commerce (Sultana et al., 2019). Techno-centric policy borrowing mechanism in T_1 further narrates the devaluation of subsistence and rural commerce, viewing RMEs as either peripheral users or emergent users that can be captured but not engaged with as economic agents in their own right (Viswanathan & Rosa, 2009). This legitimises the liberty platforms take in imposing unilateral discounts, delayed payments or minimal support.

Within this framing, RMEs' dissent is hence often viewed as 'noise' from laggards under the diffusion of technology logic (Rogers, 2003). In response, RMEs' trust threshold with platforms erodes, compounding and reinforcing on the already tensed economic threshold. Together, these pressures make withdrawal from DM platforms both rational and legitimate from the perspective of RMEs.

7.6.3 Disengagement as a Pragmatic Network Choice

The *bounded adoption* of platforms, where RMEs selectively adopt platforms such as Facebook while rejecting more specialised DM can be explained through a *pragmatic network choice* mechanism. Faced with these structural logics, RMEs often fall back on platforms already adopted by their existing networks, which hence requires the least effort while still offering adequate market reach.

The cultural preference for relational and networked forms of commerce (Viswanathan et al., 2010) further shapes this choice. RMEs rationalise that "everyone is there," and that managing multiple platforms is unnecessarily costly, both in terms of time and learning effort. In this sense, pragmatic

network choice echoes what previous scholars termed, bounded rationality (Simon, 2000), where actors economise on cognitive and resource demands by opting for "good enough" rather than optimal solutions. This is also similar to the practical adequacy proposed by Sayer (2000), which describes actors reverting to workable and outcomes that are less ideal, but within the limits of resources. The pragmatic choice for choosing a social network for commerce also resonates with the concept of embeddedness (Granovetter, 1985) as RMEs' economic activities are usually situated within local social networks and trust relations.

By contrast, specialised platforms such as Shopee or Airbnb, while functionally sophisticated, lack sensitivity to RMEs' relational practices, modalities and affordance (Bong et al., 2025), requiring impersonal transactions and digital marketing competencies that few in subsistence contexts possess (Kunjuraman and Hussin, 2017). The non-engagement with conventional platforms here is hence, less about ignorance or reluctance, but a pragmatic economising under structural and cultural conditions, resulting in the opting for sufficiency, which aligns more with local values (Chapter 5.2), as opposed to optimal technological prowess.

7.6.4 Disengagement through Adaptive Digital Informalisation

RMEs' disengagement also takes the form of what this study terms, *adaptive digital informalisation,* whereby RMEs recreate digital practices that extends relationalities. They do so with the modalities preferred by the community through the bricolaging of various digital technologies. WhatsApp groups, Facebook posts, cash-on-delivery arrangements and TikTok live selling are reappropriated into infrastructures of commerce that afford the flexibility, relationality and low compliance burden that RMEs value in conducting rural commerce.

This mechanism emerges when T_1 conditionings increase the cost of entrant into conventional platforms, further exacerbated by the gatekeeping and commercial prioritisation mechanisms within platform economy (Grabher &

König, 2020). The impersonal interactional processes and detached seller identity enforce the designers' WEIRD-paradigm of e-commerce onto rural users, while the techno-centric capacity building programmes continues to be irrelevant to the daily practice of RMEs. Collectively, these mechanisms push RMEs to seek alternate solutions through adapting informal practices into the digital world on their own terms, configuring everyday digital tools into workable solutions.

This adaptive digital informalisation mechanism among RMEs resonates with multiple entrepreneurship concepts. Firstly, the concept of bricolage has been increasingly studied among low-resource entrepreneurs (Baker & Nelson, 2005), where entrepreneurs weave a range of available tools to meet their business needs. The ability to adapt with existing resources at hand also echoes the effectuation theory from Sarasvathy (2001), albeit that the latter was studied on entrepreneurial millionaires. These agility and resourcefulness demonstrate RMEs resilience under minimal external support, infrastructural challenges and policy oversight, while illustrating disengagement as creative workaround on platforms that ill-suited for local use.

The improvisation of technology within context also mirrors the 'domestication of technology' by Silverston and Hirsh (1994). Such appropriation and subversion have been shown to contain potential for rethinking DM technology *from the rural* (Hardy, 2018). Thus, RMEs disengagement can be explained through adaptive informalisation. Rather than an exit or disengagement, RMEs are subverting technologies, bending them into systems of commerce that they are accustomed to as observed by Hobbis and Hobbis (2022).

7.7 CHAPTER SUMMARY

This chapter employed Archer's morphogenetic framework within CR in explaining why RMEs in Sarawak remain disengaged from DM platforms. The analysis revealed that before RMEs disengaged with platforms, structural conditioning had existed.

At T_1, these conditions include platform formalism and incentive structures that marginalise RMEs, post-colonial and technopreneur-centred policies and ideologies, as well as a lack of training provisions and infrastructural conditions in rural and remote regions. Under these conditions, RMEs' pragmatic agency is revealed at T_2. RMEs' willingness to learn is postponed, attendance at training courses does not lead to action, cost-benefit calculations influence exits and diffuse caution, and selective use or repurposing of generic platform channels. The structural elaboration at T_4 hence, is predominantly morphostatic, whereby conventional DMs remain marginal among RMEs in rural Sarawak, with uneven morphogenetic pockets where relational, multimodal practices and signs of institutional adjustments take hold.

In this case, the context is characterised by a configuration of platform formalism, policy oversight, and infrastructural constraints. Within this configuration, the relevant social interactions (e.g. deferred participation, ineffective compliance, rational disengagement) tend to yield the observed output of largely morphostatic disengagement with formal DMs. Conversely, a different configuration, such as reduced compliance burdens on platforms, in-situ support and improved logistics, could disable or redirect the same mechanisms and produce different outcomes. The contribution of this chapter is thus the formulation of mechanisms and their conditioning configurations, of which future studies can examine in other rural commerce settings.

We now turn to Part Three of the thesis, beginning with Chapter 8, which will provide an extended discussion on the implications of the findings, alongside the theoretical, methodological and practical contributions of the thesis.

PART III

Synopsis

8

DISCUSSION

This discussion chapter brings together and reflects on the findings of the empirical studies conducted throughout this thesis, evaluating how they have contributed to answering the research questions posed in Chapter 1. In doing so, this chapter addresses three key gaps in existing literature: first, the lack of grounded, context-sensitive studies on rural micro-entrepreneurial use of digital marketplaces (DM) in Sarawak; second, the limited incorporation of local epistemologies and design participation in mainstream digital platform development; and third, the use of critical realism for explaining DM disengagement among rural microentrepreneurs (RMEs).

By critically engaging with these dimensions, the discussion highlights both the contributions and limitations of the work and identifies pathways for future research to further build on these insights. This chapter ultimately demonstrates contributions across four key areas:

1. **The first ethnographic research of rural micro-entrepreneurs in Sarawak, grounding empirical findings of rural micro-entrepreneurship from the region, and reframes digital entrepreneurship beyond technocratic framings**

   The thesis presents the first detailed ethnographic account of rural micro-entrepreneurship in Sarawak, an understudied context in the field of rural entrepreneurship, HCI, and subsistence marketplaces. Building on previous ethnographic studies in the rural (Chamberlain and Crabtree, 2015; Venugopal and Viswanathan, 2021), the thesis

revealed how digital marketplace technologies are engaged with through the situated practices of rural micro-entrepreneurs. These findings challenge dominant assumptions embedded in digital entrepreneurship discourse (Irani, 2015; Sussan and Acs, 2019) and digital marketplace platform models (Grabher and König, 2020), offering a more substantive (Polanyi, 1944) and grounded basis for entrepreneurship policy, platform design, and the entrepreneurship ecosystem development.

2. **Demonstrating the misalignments of existing digital marketplace design for rural commerce, and introducing pluriversal marketplace alternatives through participatory design**

   Through participatory and speculative design workshops, the thesis exposes the Western-centric assumptions and design logics embedded in mainstream digital marketplaces (Bong et al., 2025), illustrating how they risk subverting existing local practices, values and modalities. Alternative digital marketplaces imaginaries rooted in rural micro-entrepreneurs' cultural, interactional and embodied practices were also co-developed. The findings calls for greater sensiting of platform design discourse with local epistemologies and interactional culture (Loh et al., 2023; Hobbis and Hobbis, 2023; Cutolo and Kenny, 2019).

3. **Advancing *rural computing* literature by 'designing with the rural', drawing from the *Cultural Engagement Approaches* from *participatory design* scholarship**

   This thesis advances *rural computing* scholarship by recasting its central framing of designing *'from the rural'* (Hardy et al., 2018; 2019) to designing '*with the rural'*, proposing a participatory design framework into the existing discourse. By adapting the *Cultural Engagement Approaches* (Winschiers-Theophilus et al., 2019; Muashakele et al., 2023a), the thesis contributes a methodological approach that demonstrates how PD can be operationalised in rural computing to meaningfully co-design across diverse rural

configurations, cultural contexts and digital literacy levels, for rural and indigenous entrepreneurship settings.

4. **Explaining digital marketplace platform disengagement among rural-microentrepreneurs through a critical realist morphogenetic/ morphostatic analysis**

   Building on existing CR studies in technology (Mutch, 2010; Heeks and Walls, 2018), this thesis adopted Archer's morphogenetic/ morphostatic framework (Archer, 1996) in identifying three structural and cultural conditionings that pre-shape RMEs' engagement with DM: *platform formalism and entrepreneurship gatekeeping*, *policy and initiative oversight* and *infrastructural mismatch*. The chapter surfaced four generative mechanisms that explain RMEs' observed disengagement with DMs. These mechanisms are *contingent alignment* (engagement deferred until structural and cultural conditions align with local realities), *trust-viability threshold* (withdrawal when platform participation no longer meets subsistence viability and relational trust erodes), *pragmatic network choice* (selecting platforms already embedded within existing social networks to minimise learning and coordination costs) and *adaptive digital informalisation* (repurposing everyday digital tools to recreate informal, relational systems of commerce). This contribution reframes disengagement from a literacy deficit lens to an outcome of context-conditioned mechanisms, providing implications to settings beyond Sarawak that holds similar contextual and mechanistic configurations.

5. **Mapping the digital entrepreneurship initiative ecosystem in Sarawak by adapting Isenberg's entrepreneurship ecosystem framework (2016)**

   Situated within Sarawak where digital entrepreneurship receives strong policy emphasis, supported with broad range of corresponding initiatives, the mapping is the first comprehensive study of the digital entrepreneurship initiatives ecosystem in the state, using an adapted Isenberg framework of entrepreneurship ecosystem (2016). With the

inclusion of target group mapping alongside the ecosystem domains, the study revealed significant fragmentation between initiators, and a marginalisation of rural micro-entrepreneurs, which provide significant policy implications in Sarawak. The mapping framework also contributes to digital entrepreneurial ecosystem scholarship (Sussan and Acs, 2017; Bejjani et al., 2023) by adapting Isenberg's framework (2016) with target group mapping for digital entrepreneurship initiative mapping.

Each of these contributions directly addresses the research questions posed in this thesis.

RQ1: *What does rural micro-entrepreneurship look like in rural Sarawak?*

RQ2: *How can digital marketplace platforms be reimagined with rural micro-entrepreneurs to more effectively reflect and support locally situated economic and social practices?*

RQ3: *Why do rural micro-entrepreneurs in Sarawak engage or disengage from conventional digital marketplace platforms?*

The desk study and ethnographic fieldwork (Chapters 4 and 5) provided an in-depth understanding of how RMEs in Sarawak engage with commerce, digital technologies, and informal business practices in their everyday lives, and outlined the methodological approach required to capture such grounded insights. Chapter 6 detailed the development of the participatory design materials, including wireframes, prompts, and scenario-building activities, used to facilitate co-design sessions.

The participatory design workshops (Chapters 6) enabled a deeper exploration of the value of involving rural communities in shaping DM futures, surfacing not only design implications but also the tensions, aspirations, and cultural specificities that are often excluded from mainstream platform development.

The final morphogenetic chapter (Chapter 7) analyses the structural, agentic and cultural mechanisms that influence RMEs engagement with DM platforms, facilitating an explanatory depth to the empirical findings of prior chapters while providing actionable implications to stakeholders looking to encourage DM engagement in rural Sarawak.

The thesis contributes through its multidisciplinary lens, not only by eliciting the challenges of RMEs in digital platform engagement, but also by providing an effective critique of DM platforms and co-designing implications for design to offer clear pathway recommendations for addressing the structural barriers in the existing design infrastructure of platforms.

Simultaneously, the CR lens also provides a wider ecosystem perspective on the need for policy alignment and initiative implementation improvements to avoid the perpetuation of a predominantly tech-based and Western-centric imagery of digital entrepreneurship that centres on the 'unicorn' searching for 'start-ups' rather than the realities of RMEs on the ground.

The remainder of the chapter lays out the four discussion areas of the thesis, followed by implications for design, policy and management.

8.1 ATTENDING TO THE VOICES OF RMEs IN SARAWAK

Recalling RQ1 on *what does rural micro-entrepreneurship looks like in rural Sarawak,* the findings of Chapter 5 intentionally attended to situate the understanding of rural micro-entrepreneurship through the emic 'voices' of RMEs. As outlined in Chapter 2, a gap remains in the rural entrepreneurship literature for a grounded, ethnographic account of RMEs in Southeast Asia, especially regarding how RMEs' work is organised in situ. This section addresses this by demonstrating how RMEs enact entrepreneurship through plural, relational and substantive logics that diverge from the entrepreneurial archetypes assumed in DM design and policy discourse.

What is uncovered are the pluralistic ways in which entrepreneurship is enacted within these settings. Through the five coat hangers of *'micro-entrepreneur', 'business model', 'marketing', 'customer relationship*

management' and *'digital transformation'*, who RMEs are, what they do in their day-to-day, and how they organise their entrepreneurial work in rural Sarawak are better understood. Juxtaposing these accounts with the commonly favoured business terminologies exposes a deeper epistemic disjuncture between imaginaries of existing policies and DM platforms with the heterogeneous lived worlds of RMEs. This section now attends to the complex, plural, and sometimes contradictory ways rural entrepreneurship is enacted in Sarawak in relation to DM platforms, to better inform policy and design implications.

Revealing the Multiplicity of Rural Entrepreneurship

In rural Sarawak, RMEs rarely identify as *usahawan* (entrepreneur). Their descriptions of self are often rooted in their locality or community, such as *orang kampung* ('village folks'), or in traditionally recognisable vocations such as 'farmers' or 'market sellers'. Their work is multiple and fluid, spanning multiple ventures across farming, market trading, foraging and part-time employment. RMEs' enterprises are also grounded in a moral and relational logic encapsulated in emic concepts like *cukup makan* ('enough to eat'), *tolong* ('to help'), and *berkat* ('providence'). These findings demonstrated how RMEs organise their work through relational, multi-vocational and faith-infused practices that are enacted through informal and personalised customer interactions. Marketing likewise unfolds through embodied and relational acts, while digital transformation is reconfigured through low-tech bricolage (Baker and Nelson, 2005) that sustains local rhythms rather than replacing them. What becomes obvious is how the realities of RMEs' work diverge from the 'digital transformation' that policy envisions. Where glimpses of digitalisation occur, it is typically deferred, resisted or appropriated, which deviates from the more linear trajectories expected of technology adoption (Yusoff et al., 2021). Commerce is thus less oriented towards scalability and growth, but often directed towards sufficiency, reciprocity, and spiritual meaning.

These accounts therefore, complicate what constitutes entrepreneurship in 'the rural', it unsettles who counts as an RME, and how rural entrepreneurship

is practised. These multiple groundings are essential because they should serve as starting points for designing technologies within these settings, rather than from a specific, pre-determined technology, such as a DM. This technocentric approach comically mirrors the ‘solution seeking for a problem’ paradigm that has been critiqued by ICT4D and HCI scholars alike (Blythe et al., 2016; Ames, 2019; Heeks, 2012). This approach becomes especially concerning in rural and indigenous settings, where technology not only has a broadly celebrated prerogative to be ‘transferred’, but also holds significant power to create new structures and alter rural practices (Heeks, 2019; Bong et al., 2025), within vulnerable communities that may struggle to fully consent to at the point of engagement.

Challenging the Technocratic and Solutionist Scripts of Digital Marketplaces

The grounded realities of RMEs disrupt dominant assumptions that continue to underpin much of e-commerce research and design discourse. Studies in this field have predominantly portrayed sellers through a technocratic or solutionist framing, focusing on algorithmic efficiencies and pricing optimisation (Zhao and Peng, 2023; Wu et al., 2014), the enhancement of trust on sellers through reputational systems (Mauri et al., 2018; Costello & Reczek, 2020), or optimisation of sellers' product value (Nan et al., 2020). Within these framings, mainstream platforms imagine the ‘entrepreneur’ as a rational, opportunity-seeking individual (Shane and Venkataraman, 2000), familiar to the capitalist and technocratic logics of the platform economy and compliant with its operational rules (Grabher & König, 2020). What is implicit here is the formalist assumption that seller behaviours are standardised and predictable, or at least expected to be, and are susceptible to manipulation through structural incentives and instrumental platform mechanisms. Such portrayals reduce sellers to mere quantifiable attributes that are to be optimised and fine-tuned by the platforms, a process similar to the ‘dehumanisation’ described by Mariani et al. (2021), where in their work, marketing interactions are replaced by algorithmic processes that displace and diminish human qualities. Rather than being recognised as reflexive individuals who are capable and often desiring of negotiating, influencing, or

co-shaping the digital spaces in which they organise their trade, sellers are flatten out as predictable data points.

In contrast, RMEs' practices align more closely with the substantive economy described by Polanyi (1957): embedded within kinship, faith, and community obligation (Granovetter, 1985). Their livelihood arrangements privilege social cohesion and communal welfare, often over profit maximisation. Acts of 'tolong' and 'berkat' are actual logics of exchange that are practised and continue to sustain relational bonds in rural communities. Hence, digital systems must therefore recognise these local moral rationalities as legitimate economic rationalities (Viswanathan et al., 2010), and not simply as outdated traditions or mere religious values.

These insights reveal how dominant design paradigms in DM risk the continued universalising of the formalised economic into technology. As Bong et al. (2025) observe, current DM platforms remain predominantly WEIRD-centred: formalist rather than substantive in their economic model, individualistic rather than communal, universal in design rather than culturally plural, and transactional-oriented rather than relational. The archetypal 'seller' is invariably modelled after urban, tech-savvy users who possess data-driven entrepreneurial alertness, are innovative and competitive, similar to the traditional Schumpeter and Kirznerian entrepreneurs types. These technological scripts (Akrich, 1992) are presupposed as prerequisites of DM participation, but inevitably benefit capable sellers who fit this profile, while leaving less-familiar users with higher barriers of entry. This analysis thus reveals how DM infrastructures reproduce exclusion through what Chapter 7 referred to as platform gatekeeping, marginalising entrepreneurs with a substantive economic outlook, many of whom are RMEs. How should DM platforms be better designed for RMEs? This question is addressed by revisiting the conceptualisations of RMEs in the scholarly literature in light of the field findings.

Towards a Plural Understanding of Rural Micro-Entrepreneurship

Rural entrepreneurship scholarship over the past three decades has developed significantly in its theory-building and coverage (Stathopoulou et al., 2004; Korsgaard et al., 2015). However, much of the theorising draws from the Global North, which continues to shape institutional logics that, in turn, guide decision-making amongst policymakers, funders, and development agencies.

The fieldwork in Sarawak revealed the complex arrangements of rural micro-entrepreneurship and illustrated that the usual categories of 'necessity' and 'opportunity entrepreneurship (Reynolds et al., 2002) are inadequate for capturing the varied motivations of RMEs (Alvarez et al., 2014; Langevang et al., 2012), particularly when the former, often assumed within these contexts, are framed as a necessity with little conscious choice. In Sarawak, RME manages their varied roles and income-generating activities based on existing opportunities, family relations, social networks, resources, and capabilities, demonstrating how agency is deliberated and negotiated (Venugopal and Viswanathan, 2021), albeit within existing constraints.

Entrepreneurial motivations thus extend beyond necessity or opportunity to include enjoyment, personal interest, cultural continuity, and social and communal contribution. Income generation remains inseparable from the social relationships, resource availability and reflexivity of RMEs, that continue to both sustain and constrain entrepreneurship (Langevang et al., 2012; Dawson, 2021). Moreover, the physical setting where RMEs are located also holds important implications for their work. As noted by Korsgaard et al. (2015), place and space in rural settings shape the nature of rural enterprises. This embeddedness shapes the localised processes, opportunities, and constraints of entrepreneurship in these settings.

The framing of RMEs, hence, warrants reconsideration. Across Sarawak, where nearly half the population resides in rural regions (Tey et al., 2019), many entrepreneurs combine self-employment with waged work. The literature has framed this role through various lenses, including hybrid entrepreneurship, lifestyle entrepreneurship, and the perspective of the informal economy and subsistence marketplace. The hybridity in this study, however, differs from previous conceptualisations of hybrid entrepreneurship

(Pollack et al., 2019) or lifestyle entrepreneurship (Dias and Silva, 2024). The former is often associated with a transitional phase towards self-sustaining enterprises, while the latter aligns more with self-actualisation within the Global North imaginaries.

For RMEs, maintaining multiple forms of work is often a deliberate way of practically exerting agency and negotiating aspirations within constraint (Venugopal et al., 2017), a distinctive rural logic of continuity, subsistence and sustainability. These forms of juggling hybridity have less to do with aiming for full-time entrepreneurship or with customising an idealistic lifestyle. It has more to do instead with what entrepreneurial researchers increasingly refer to as human dignity in entrepreneurship studies (Vázquez-Maguire and García, 2014). A burgeoning of literature in entrepreneurship and subsistence studies, particularly in marginalised and low-income settings have increasingly centred dignity as a focal point for entrepreneurship and development, departing from mere economic models of privileging financial indicators (Pirson et al., 2019; Vázquez-Maguire, 2020, Venugopal et al., 2025).

RMEs' concerted autonomy in picking and choosing multiple work demonstrates an active exercising of agency, albeit that these decisions do not always result in maximised returns. This seemingly paradoxical act is better understood through what Vázquez-Maguirre (2020) termed the *production* or *promotion* of human dignity in indigenous entrepreneurship, which centres on the entitlement to one's choices, freedom and self-determination. This form of agency also echoes Baker and Nelson's (2005) 'entrepreneurial bricolaging', where, despite being within constrained environments, entrepreneurs exert agency through assembling workable solutions from proximate resources.

The recognition of hybridity and RME agency helps us reframe rural entrepreneurship not with lofty aspirations of transitional romanticism, nor reduce them to mere necessity and precarity, a balance Viswanathan (2009; 2017) has long advocated for in rural and subsistence marketplace settings. Instead hybridity and multiplicity of micro-entrepreneurship work here can be seen as a deliberate, calculated and adaptive exercising of agency,

balancing personal aspirations, structural constraints, with financial security, all important aspects of maintaining dignity (Vázquez-Maguirre, 2020). Researchers have called for dignity-centric approaches in entrepreneurship (Pirson et al., 2019) and climate promotion (Venugopal et al., 2025) within subsistence communities, this study sheds light on its potential in DM research. If RMEs are seen as reflexive actors, sensitive to factors that impact their agency, technology designers should consider platforms that either limit or enhance their sense of dignity. This comes from being intentional in grounding user understanding prior to designing solutions.

Accordingly, interventions should be sensitive to these localised conceptualisations of rural entrepreneurship. From DM platform outreach to RMEs, to capacity building initiatives by relevant agencies, knowledge of and sensitivity to social relations and dynamics of rural communities are essential while remaining sufficiently adaptable to facilitate place-based capacity development (Winterton et al., 2013; Willett, 2023). This stands in contrast with the homogeneous, centralised approaches to RME development programmes, which include DM outreach programmes, that may be informed by broader rural entrepreneurship theories, but are insufficiently sensitised to their local settings, or are not flexible enough to consider the precise community in which interventions are introduced (Abiddin et al., 2022).

What does rural micro-entrepreneurship look like in rural Sarawak? By attending to the local 'voices' of RMEs, rural micro-entrepreneurship is shown not to be a straightforward path of opportunity recognition or scaling, but a continuous negotiation between livelihood, care, community, and faith, rooted in a diverse economy. While mainly substantive, it remains embedded within broader formal systems (Elder-Vass, 2016), which continue to shape and constrain rural entrepreneurship (Langevang et al., 2012; Dawson, 2021). These understandings carry implications for platform designers, policymakers and capacity building stakeholders, which are elaborated in later sections.

8.2 REDEFINING DIGITAL ENTREPRENEURSHIP AND DIGITAL MARKETPLACES

Following the situated understanding of micro-entrepreneurship in Sarawak generated through RQ1, which asked *what rural micro-entrepreneurship looks like in Sarawak*, this section now reflects on the implications of such an inquiry and its findings. Given the complexity and heterogeneity of rural micro-entrepreneurship outlined earlier, a key implication is the need to rethink how *digital entrepreneurship* is defined and operationalised, and by extension, how *digital marketplace* 'platforms' are conceptualised through which such entrepreneurship can be enacted.

Here, both terminologies are re-evaluated with a critical and pluralistic view, informed by this study, in an attempt to broaden the established and narrow definitions of their theorising. This broadening is needed as the present dominant interpretation often holds limiting and gatekeeping impacts, as demonstrated in the previous section. This section addresses gaps in Chapter 2.2 by reevaluating how digital entrepreneurship in rural areas and DM platforms are conceptualised through the situated practices of RMEs.

From Tech-Centric Discourse to Grounded Digital Imaginaries

Across policy documents, digital economy strategies and digital initiatives, digital entrepreneurship is consistently framed through techno-centric lenses with embedded values of innovation and growth (Li et al., 2017; Sussan and Acs, 2017; Sahut et al., 2021; Bejjani et al., 2023). This framing is frequently linked to the start-up culture, with technological innovation and commercialisation as its *poster child* (Sarawak Digital Economy Strategy, 2017). The 'digital' is envisioned more in terms of state-of-the-art technology, as rather than the digital domain in its general sense, while 'entrepreneurship' is positioned as the means by which individuals scale ideas into globally competitive ventures.

In Sarawak, RMEs are engaging digital technology within their enterprises, although not in the trajectory typically framed under 'digital entrepreneurship'. The ethnographic findings demonstrate how technology is

engaged with pragmatism and contingent, appropriated to support social and economic purposes while negotiated within existing constraints. Digital ingenuity is demonstrated through 'bricolaging' (Baker and Nelson, 2005) low-tech tools such as WhatsApp, Facebook or TikTok Live (Joshi and Mudliar, 2025; De, 2025; Bong et al., 2025), as opposed to the development of high-tech applications or disruptive solutions; and entrepreneurship is enacted through the supporting of the rural substantive economy rather than in the creating of scalable start-ups.

Our analysis of structural conditionings in Chapter 7.2 has demonstrated why digital entrepreneurship has become associated with innovation-driven and high-tech models in Sarawak. National and regional policies are shown to adopt models of global innovation frameworks, with heavy emphasis on tech-centred innovation, and strengthened through the 'ecosystem' of incubators, digital hubs, accelerators and venture capital funding. While these technology-focused digital entrepreneurial ventures ought to be supported and promoted, their restricted definitions inherently exclude the majority of RMEs.

The Innovation Ideology

As discussed in Chapter 2,2, DM platforms encode WEIRD-centred behavioural assumptions and formalist economic logics, yet few studies examined how these assumptions manifest in rural settings. Building on this critique, the research uses STS and postcolonial computing scholarship to explain why dominant innovation framings that are techno-centric misalign with RMEs' everyday realities.

Irani's (2015) work in India highlights what she calls *entrepreneurial citizenship*, where Silicon Valley's valorised entrepreneurial ethos of 'making and doing' trains locals to view social change through a transnational culture of 'innovation', as opposed to civic dialogue, collective struggle or redistributive justice (Baviskar et al., 2006). This fast-paced, optimistic, and individualised vision for change resonated particularly with middle-class actors, who are more inclined toward rapid, market-driven solutions that

better align with the meritocratic and technocratic view of progress (Irani, 2015). This analysis resonates with existing findings of Sarawak's digital entrepreneurship discourse. Policies and initiatives continue to uphold this form of *entrepreneurial citizenship,* where development is both depoliticised (Ferguson, 1994) and moralised through innovation ideology (Irani, 2023).

Digital entrepreneurship naturally extends this ideology. Its greater accessibility enhances legitimacy for broader civic engagement but also risks excluding those who do not participate. Irani's more recent work (2023) furthered the critique by calling the innovation discourse an 'update on colonial hierarchies' that prioritises novelty and technological futurism, while dismissing local practices of maintenance, subsistence entrepreneurship and frugal innovation as derivative (Kilic and Sailaja, 2024; Sridharan et al., 2014; Weyrauch and Herstatt, 2017). This hierarchy of values, often borrowed from a non-local context, creates what Escobar (2018) critiques as 'coloniality of innovation', privileging certain actors and forms of knowledge while delegitimising others (Cunningham et al., 2023; Muashekele et al., 2023).

This study thus demonstrates that digital entrepreneurship is a contested ideology that, at present, leans towards technocracy but remains debatable. It exposes how digital entrepreneurship policy in the Global South often reproduces the very exclusions it claims to remedy (Heeks, 2019; Suchman and Bishop, 2000), producing entrepreneurial citizens who fit the mould of innovation while silencing others whose creative practices lie outside its frame (Irani, 2015).

In Sarawak, listening to the voices of RMEs allows us to encounter and counter this ideology, highlighting instead a pluriversal landscape of digital agency. Recognising these alternative forms of creation does not valorise informality, but resituates *innovation* (Suchman and Bishop, 2000) within the substantive economy. RMEs' grounded practices reveal that digital entrepreneurship need not conform to the scripts of the innovation economy to be creative, valuable, or developmental. Redefining digital entrepreneurship, therefore, requires the decoupling of innovation from its technocratic imperatives, and re-centring it on what Sen (1985) described as

the expansion of human capabilities, which in this context, is the adaptation of technology to what RMEs are truly able to do and achieve. In doing so, it recast the narrative from a presumed deficit of digital entrepreneurship in rural Sarawak to a space of diverse digital futures to be explored.

Alternative Digital Marketplace Platforms: Leaving the 'garden of gods'

From the redefining discourse above, the discussion now moves from the 'playing field' of digital entrepreneurship to *digital marketplaces*, traditionally regarded as the primary avenue through which RMEs engage in such entrepreneurial activities (Tang and Zhu, 2020; Yusoff et al., 2021; Barik et al., 2023). As noted in Chapter 2.2, Cutolo and Kenney (2019) describe the power imbalance between platforms and entrepreneurs, with the former seen as platform 'gods' and the latter as merely 'playing in the gardens of the gods', implying helplessness and precariousness of platform-dependent entrepreneurs under these powerful platforms. This understanding is expanded by proposing that dependence is not solely based on the power asymmetries embedded in infrastructure ownership, the setting of terms and conditions, and the dictation of visibility algorithms (Jacobides et al., 2018; Altman et al., 2022).

Dependence, as contended here, also lies in the singular trajectory through which digital entrepreneurship on platforms is conceived and legitimised. Extending the religious language used by Cutolo and Kenny (2019), the 'dogma' of conventional DM platforms as default DMs for micro-entrepreneurs to engage in e-commerce, together with the 'ritualistic' workflows and requirements users must perform to participate, further establishes an epistemic ideology that deepens RMEs' dependence on these platforms, often even before they become an 'adherent'. Moreover, the privileging of formal metrics of viability and scalability (such as GMV mentioned in Chapter 7), coupled with the steep learning curve demanded for adoption, reflects a structural logic that reproduces dependence. These logics demonstrate how RMEs' are structurally conditioned and cultural mediated

in their platform engagement, drawing them into a restrictive order that constraints meaningful digital entrepreneurial agency.

Within this existing framework of the DM order, scholars have argued for more supportive complementors, third-party individuals or firms that provide products or services to enhance the value of the core platform, in order to better facilitate platform participation (Ghazawneh and Henfridsson, 2013; Cenamor, 2021). In their recent work, Cutolo et al. (2022) even recommend a 'second-order-ecosystem' that includes third-party consulting services and enablers, which our study has also considered (interview with DM enabler in Chapter 7.4.1). Unfortunately, these solutions are still confined within the same 'garden' of the same 'platform gods', thereby the power asymmetries are only extended to subsequent orders of the ecosystem.

Drawing from the critical realism-informed analysis, this study clarifies that RMEs do not just need better support towards DM platform participation, thereby formalising the dependency already foreseen, but a crucial need for alternative forms of DMs, avenues that are more plural and aligned with the localised, micro-, subsistence-based understandings of digital entrepreneurship amongst RMEs. This resolution addresses the structural conditionings that predates the power struggles described by prior authors, and offers a pluriversal, design-oriented extension to previous critique (Cutolo and Kenny, 2019; 2022; Altman et al., 2022). In doing so, the discussion is able to shift from diagnosing dependence toward exploring alternative socio-technical avenues or platforms that foreground local epistemologies and 'business models' that resonate, which is further discussed in the next section below.

8.3 DESIGNING DIGITAL MARKETPLACES 'WITH THE RURAL'

Following the previous section that proposes a redefinition of DM through the lived realities of RMEs, this section turns to RQ2 of the thesis, which asked, *how can DM platforms be reimagined with RMEs to more effectively reflect and support locally situated economic and social practices?* This section responds to the gap in Chapter 2.3 on the limited application of PD in

entrepreneurial technologies by showing how RMEs' epistemologies can become design materials for reimagining DMs from the ground up.

Rural sites have been traditionally perceived as the receivers of the one-directional innovation pipeline (Su et al., 2021), where technological developed in sophisticated urban centres are merely adapted for rural use, assuming their universal relevance (Toyama, 2011; Wyche, 2022). Scholars have challenged this deficit view through the notion of *designing from the rural* (Hardy et al., 2018; 2019), where rurality is positioned as a site of situated knowledge and generative creativity, capable of informing and emanating design outward.

This section begins by extending the *design from the rural* lens to the domain of DM design, articulating the applicability and limitations. This is followed by the proposal of the *design with the rural* paradigm, theorising the transcultural engagement approach in co-producing DM design implications, which points towards a need for more collaborative, plural and reflexive framework for *rural computing*.

Extending 'Designing from the Rural'

Previous scholarship in *rural computing* marked an important corrective to deficit narratives of rurality (Hardy et al., 2018). This echoes the asset-based approach in development studies that emerged from its problem-based predecessor (Heeks, 2002; Pei and Nardi, 2019). In HCI scholarship, a corrective movement was also observed from user-centred design, where designers design for the 'ideal user' through averaging of traits, to participatory design, where participant practices are to be 'respected' (Peter et al., 2014) and centred while designers take a facilitating role. Similarly, 'designing from the rural' was a recasting of rural communities from recipients of technology, often ill-designed for their context, to sources of design ingenuity and inspiration that could emanate from the rural to urban settings and beyond.

Indeed, the participatory design workshops conducted in this study incorporated these ideals, intentionally situating design within the rural

settings and communities to elicit design implications 'from the rural'. An example is the importance of *voice* as a missing modality in existing DMs, an intuitive communicative medium critical for information sharing and trust building in rural and subsistence marketplace settings where literacy is low (Viswanathan, 2010;2012). The relational modalities, embodied expressions and naturalistic interactions highlight in Chapter 6 however highlight both its utility for RMEs in Sarawak, as well as its potential implications for DMs in other contexts, seen through the increased adoption of DM with socially-mediated interaction (Rachmad, 2022; Andon and Annuar, 2023).

These findings demonstrate voice as not only an interactional preference by rural actors or 'emergent' users (Bidwell et al., 2015), but also a crucial modality increasingly prioritised in many non-rural settings, such as its adoption in smart devices, Artificial Intelligence (AI) models (Cambre and Kulkarni, 2019; Foulkes et al., 2019; Hossain and Ahmed, 2021) and even dating apps (Oprea et al., 2020; Shen et al, 2024). Hence, in this regard, the *rural computing* theorising is agreeable (Hardy et al., 2018), in that the situated uniqueness of rurality could be generative of design that has broader implications for context beyond the rural.

Designing 'with the Rural' through the Transcultural Engagement Approach

While Hardy et al.'s (2019) theorising offers a crucial intervention within rural HCI, especially in the contexts of developed and high-income countries, it nonetheless implies a one-directional flow of knowledge, from the rural outward. Findings of this study from Sarawak build on this theoretical framing by proposing *designing with the rural.* This framing positions rural communities as co-creators and not sole-creators in the design process. It foregrounds mutuality, reflexivity, and the negotiation of multiple epistemologies in shaping design outcomes. The 'with' framing is both methodological and epistemic, acknowledging local knowledge as neither static nor sufficient on its own. Rather, it gains generative insights through interactions with multiple dialogical perspectives, as opposed to the more romantic stance of 'from', which paints the local perspectives as sufficient.

This reframing is both necessary and appropriate because it moves beyond the dichotomy of techno-positivism common in many ICT4D projects (Heeks, 2002; Heeks and Walls, 2018), with its opposite of valorising of rural and indigenous knowledge, common in participatory design projects that are overly concerned with power and representation, often at the cost of pragmatism and innovation (Bødker and Kyng, 2018). Traditionally, marginalised groups have not been involved in technology design, linking back to Irani’s (2015) critiques of the inner circle of design decision making that speaks of marginalised groups, but rarely involves them.

Much of HCI literature since has advocated the move from user-centred design towards participatory design, particularly emphasised amongst the community-based and justice-oriented design communities (Costanza-Chock, 2020; Reynolds-Cuellar and Ramos, 2020). The emphasis of these movements is that communities that are most vulnerable to technologies should actively shape them (Muashakele et al., 2023b). However, as argued by Winschiers-Theophilus et al. (2021), the movement from non-participation of communities to participatory design has often swung the other way, whereby the roles of designers themselves are relegated to mere facilitators, in view of re-centring marginalised voices. Critiques of PD also question the discrepancies between such morally-motivated interventions with the practical impact of its outputs, which are often focused on reporting PD methods and emancipatory narratives over technology design (Bødker and Kyng, 2018).

The approach presented here acknowledges these critiques, but proposes a workable solution that recognises the limitations of PD, while being intentionally focused on the practicality of solutions that do not oversensitise moral obligations and cultural sensitivities, in the utilisation of the transcultural approach to co-design (Winschiers-Theophilus et al., 2021) . Indeed, our work with RMEs is contextual and situated to the local needs and aspirations. The utilisation of this framework envisions the inclusion of multiple perspectives, while requiring a higher level of reflexivity that respects all cultures, without elevating one over the other, and without limiting its discursiveness for design (Loh, 2023; Muashakele et al., 2024).

In the iterative PD workshops conducted along the cultural engagement continuum (Chapter 6), the final stage brought together local RMEs with technology designers and researchers, enabling the co-creation of more concrete design outcomes, outputs that neither community members nor designers could have produced independently, though each had generated valuable insights in their own right as demonstrated. This collaborative approach illustrates the generative potential of co-production within transcultural design practice that values both local knowledge, as well as outsider expertise. In fact, Hardy's (2024) recent work has proposed precisely the outside-insider collaboration that leverages the cultural assets in rural with commercialisation experts from outside the community to generate high-tech economy in rural America. The PD methodologies used in this study provides such collaborative possibilities a framework through the transcultural engagement within the platform economic domain.

This study therefore contributes empirically to the cultural engagement framework (Winschiers-Theophilus et al., 2021) in showcasing that each cultural engagement framework contributed unique yet partial insights, that supported the elicitation of DM design implications for '*designing with the rural'*. In doing so, this study extends rural HCI beyond inspiration and localisation, advancing the 'designing with' framework that embeds co-production and insider-outsider collaboration as a central principle. This contribution both empirically grounds the transcultural engagement framework in practice, while conceptually reorients rural computing toward a collaborative form of innovation.

Reimagining Pluriversal Digital Marketplaces

Having established the necessity of designing with the rural, the subsequent goals lie in reimagining the kinds of DMs that such collaboration could generate. Instead of just adapting existing platforms for rural users, A necessary and important implication of this study is that the findings highlight the need to consider alternative forms of DMs that support digital trade

without perpetuating the dominance of platform-first imperatives, or 'platform gods' as previously described.

Demonstrated through RMEs' everyday resistance, reappropriation, and renegotiation of digital tools for commerce in Sarawak, these improvisations exemplify how local actors reconstruct technology to restore meaningful and locally grounded forms of relationality. These creative reappropriations of platforms, mirrored also in other indigenous contexts (Hobbis and Hobbis, 2023), reveal that DM design need not begin with dominant platform templates. Instead, adopting a pluriversal perspective when viewing these improvisations and re-appropriations allows them to be seen as expressions of an alternative digital future (Escobar, 2018), where marketplaces can be plural, negotiated, and situated spaces of commerce, rather than uniform infrastructures governed by platform formalism.

Yet, conventional HCI in DM design continues to privilege usability, interface efficiency and customer-centric optimisation (Kourgiantakis et al., 2024; Nah and Davis, 2002; Vora, 2000), overlooking the socio-cultural misalignments between platform logic and local realities. Designing with the rural challenges this paradigm by treating local epistemologies not as supplementary 'user insights', but as design materials that supports the reconfiguration of what DMs can be.

Through the PD workshops, for instance, participants envisioned a marketplace app where products could be narrated through live video broadcasting by local sellers, merging storytelling with synchronous interaction to reflect how trust is cultivated locally, albeit in a 'digital market'. Similarly, RMEs' use of WhatsApp for commerce, a burgeoning research field in recent years among developing countries (Joshi and Mudliar, 2025; De, 2025) demonstrates how informal and low-tech channels already function as *de facto* DMs. Such examples provoke possible pathways for reimagining DMs with local RME communities.

This reimagining aligns with emerging forms of *social commerce,* described as '*a more social, creative and collaborative approach used in online marketplaces'* (Huang and Benyoucef, 2012, p.247), including the reliance

on word-of-mouth as a mechanism in conducting purchases (Zhou et al., 2013). Although conventional DMs have traditionally integrated social commerce within their design, the emergence of social commerce on instant messaging applications like WhatsApp or WeChat, a social messaging app in China, is a more recent development (Cao et al., 2020; Shen et al, 2024).

The widespread acceptance of instant messaging social commerce is attributed to its affordance of sociality and interactivity, built upon existing social networks with strong shared norms and identity (Cao et al., 2020). In this light, existing RME practices of WhatsApp reappropriation may even prefigure global social commerce trends that seek to humanise digital exchange (Hofkirchner and Kreowski, 2022), particularly relevant in the dawn of human-AI interactions (Brown and Halpern, 2021; Magni et al., 2024).

Moreover, the substantive nature of rural transactions also demonstrates that alternative DMs need not emulate platform infrastructures, but can evolve from social infrastructures already present in communities. The informality and flexibility embedded in existing rural practices offer co-design opportunities that can sustain RMEs' practices and values rather than erode or suppress them through the enforced adoption of alien platform mechanisms.

Therefore, the dominance of technology design as a domain for and by distant designers requires re-evaluation. PD literature has long advanced this argument, yet the findings here show that co-designing with the rural moves beyond inclusion and representation, toward the co-production of alternate DM design futures with RMEs that hold the possibilities of generating design insights capable of informing design both within and beyond rural contexts.

8.4 A SUPPORT ECOSYSTEM THAT IS 'NOT NAÏVE'

Following the discussion in Chapter 7 on RQ3 of *why rural micro-entrepreneurs in Sarawak engage or disengage from conventional digital marketplace platforms,* this chapter now turns to the implications of RMEs' disengagement towards the supporting entrepreneurship ecosystems. In

Chapter 2.5, Sarawak's digitalisation literature highlighted the lack of explanatory research in rural digitalisation studies on how the structural, cultural, and agentic mechanisms shape RME's digital engagement in Sarawak, a gap this section builds on.

Drawing from CR's critique of *naïve realism*, this section argues for a support ecosystem that is not naïve, one that critically engages with the interdependent and evolving dynamics of *structure, agency,* and *culture* (SAC). As Archer (1995, 2000) emphasises, this triadic analysis is crucial as structural conditioning and cultural mediation precede individual action, requiring policies to consider their interplay, while neglecting this risks misreading of behaviour and reinforcing status quo.

While support mechanisms are central to digitalisation and empowerment, the analysis reveals that interventions often assume a linear trajectory from provision to adoption. They give limited attention to the rationalities and agency of participants in the interaction process, while simultaneously lacking robust monitoring and measurement (Tham, 2021; Yusoff et al., 2021). Without such sensitivities, well-intentioned programmes risk reproducing and amplifying existing inequalities of access and use (Toyama et al., 2011; Heeks and Wall, 2018). Therefore, a non-naïve ecosystem approach must account for how actors already act and adapt, while simultaneously recognising reflexively the structural and cultural conditions that precede them. Below, the supporting structures are discussed through the analysis of the digital entrepreneurship initiatives in Sarawak, and suggest avenues where it could be strengthened.

'Naivety' of Existing Support Ecosystem

The analysis of support initiatives reveals multiple SAC misalignments within the existing support ecosystem, contributing to the morphostasis of RMEs' digital and DM engagement. This includes fragmented institutional provisioning and targeting of initiatives (structure), the selective gatekeeping mechanisms resulting from techno-centric initiatives (culture), and the interactional mechanisms of RMEs in deferring participation, resistance,

bounded adoption and appropriation (agency).

Structural Misalignments: Fragmentation and Duplication

Sarawak's strong focus on digital human capital initiatives reflects global trends, where digital skills are widely associated with entrepreneurial success (World Economic Forum, 2020). Nonetheless, the proliferation of training initiatives has produced duplication, weak coordination, and ineffective targeting due to overlapping agendas between ministries and agencies, with limited mechanisms for measurement and monitoring. Ministries and agencies often act in siloed mandates, generating duplication in DEIs that concur with the World Bank's report (2022) on Malaysia's digitalisation efforts. This echoes broader critiques that institutional silos weaken entrepreneurial ecosystems (Hruskova et al., 2022; Marinelli et al., 2023), aligning with concerns of 'policy-heavy' ecosystems (Stam, 2015) that lack evaluation of structural reinforcement and cultural fit. This layering of initiatives creates institutional oversight that perpetuates morphostasis for RMEs, as acknowledged by a policy stakeholder in Chapter 7.

Cultural Misalignments: Technocentric Gatekeeping

While structural misalignments concern initiative coordination and resource allocation, cultural misalignments relate to the ideational assumptions shaping which forms of entrepreneurship are legitimised and supported. Observed through policy documents, stakeholder interviews and the concentration of digital entrepreneurship finance initiatives in high-tech ventures, Sarawak's digital entrepreneurship support ecosystem continues to valorise techno-centric digital entrepreneurship. Critically, rural and marginalised entrepreneurs are excluded from multiple domains within the support ecosystem. Digital Finance Initiatives (DFI) in particular, reflect a market-centric venture logic that prioritises return on investment (ROI) over inclusion, thereby excluding the majority of local entrepreneurs and exacerbating inequality (Ermawati, 2023). Roundy et al. (2017) and Block et al. (2018) caution that when entrepreneurial pathways valorise only scalable models (such as tech-based entrepreneurship) while discriminating against diverse entrepreneurial profiles, ecosystems lose diversity and resilience. In

CR terms, this represents a misalignment in the dominant culture of technocratic policies, creating a morphostatic reproduction of cultural logic (Archer, 1995) within the implementation of initiatives. This cultural misalignment resonates with broader concerns raised in the EE literature, where informal and rural actors who do not conform to the conventional ideals of digital entrepreneurs are relegated to the periphery of formal ecosystems (Bowen & Morris, 2019; Marinelli et al., 2023).

Agentic Misalignments: Relational and Spatial Mismatch

Despite Sarawak's rural population (Tey et al., 2019), many RMEs face limited access to urban-centric support initiatives. These patterns correspond with Ramli and Williams (2024), who observed persistent disparities in entrepreneurial participation among Malaysia's ethnic minorities. Yet, RMEs negotiate their engagement with digital and institutional systems through adaptive and relational strategies. This agency is visible despite the structural inequalities that RMEs face (Bowen & Morris, 2019). These acts of deferred participation, bounded adoption, and resistance represent deliberate choices rather than mere disengagement.

Similarly, when engaging with Digital Market Access (DMA) initiatives, RME displays strategic selectivity in adopting generic platforms, repurposing messaging apps like WhatsApp, and developing local coordinated forms of marketing. These agentic choices underscores Spigel's (2016) argument that social and network capital are central and constitutive entrepreneurial mechanisms. The informal institutions mentioned by Roundy et al. (2017), such as social networks, trust-building and relational brokerage, demonstrate that RMEs' agency is situated and adaptive, performed through relationality, trust and incremental adaptation which reveals how RMEs sustain rural livelihood through digital means.

The constraints shaping RMEs' digital engagement parallel patterns observed in subsistence farming communities within food-surplus regions, where production capacity does not translate into livelihood security due to limited market access (Sibhatu & Qaim, 2017; Goyal, 2010). Drawing on Sen's

entitlement approach (Sen, 1981, 1985), market participation can be understood as a form of capability, which is the ability to exchange production for income, goods, and wellbeing. In rural Malaysia, as in many developing regions, infrastructural barriers, policy restrictions, and digital exclusion constrain this capability, leaving communities unable to convert abundance into stability (Akhir et al., 2009; Chappell et al., 2022). This analogy underscores that digital market access, much like food-market access, constitutes a form of entitlement. Empowerment therefore hinges not on the availability of platforms alone but on aligning structural conditions, cultural meanings, and agentic capabilities that enable participation. Without such alignment, support ecosystems risk reproducing what Sen terms "entitlement failures"—where opportunities exist in form but not in function. Recognising market access as an entitlement reframes digital participation from a matter of adoption to one of justice and capability, strengthening the call for a support ecosystem that is, in critical realist terms, not naïve.

Overall, the morphostatic conditions of digital entrepreneurship support ecosystem, at least for RMEs in Sarawak, would benefit from a more critical realist analysis and evaluation. Through this lens, the analysis reveals how existing structures reproduce the technological optimism of the WEIRD, while cultural norms privilege the start-up culture drawn from Western models, with little flexibility in accounting for local adaptation and agency. These morphostatic conditions expose the limitations of top-down heavy policies in driving an ecosystem, which has inaccurately assumed that the provision and availability of support should translate to meaningful impact.

Toward a Relational and Reflexive Support Ecosystem

A support ecosystem that is 'not naïve' therefore, recognises that structural and cultural conditionings are real and enduring, yet treats RME actions as adaptive responses within those conditions. It implies an ecosystem that evolves through reflexive coordination among domains (structure), the assumptions embedded within support initiatives and how they are perceived by recipients (culture), and recipients' actions and responses to these

provisions (agency). Such an ecosystem is relational in that it builds upon existing trust networks as foundations of support (Zhou and Cen, 2024), rather than bypassing them. It is reflexive in that it learns from the outcomes of interventions, adjusting structures, metrics, and delivery models through feedback from its actors.

As identified in Chapter 7, mechanisms such as contingent alignment and adaptive informalisation describe how RMEs navigate structural and cultural misfit. Applying these insights, a support ecosystem must be coordinated across its respective domains (Isenberg, 2016) in their inclusivity of target beneficiaries and reflexivity to the beneficiaries' context and assets. It meets entrepreneurs where they are at and works with their everyday logics and relational structures, as opposed to assuming adoption as automatic following provision.

This corresponds with the reciprocal capacity building proposed by (Hui et al, 2024), which suggests a mutual learning approach between initiative workers and entrepreneurs that enables the co-defining of objectives, metrics and goals. The informal institutions mentioned by Roundy et al. (2017), such as social networks, trust-building and relational brokerage, need to be considered within infrastructural and support provision, echoed by Bong et al. (2025).

The findings, therefore, extend entrepreneurship ecosystem literature by demonstrating that geographic exclusion and relational gaps reflect systemic institutional oversight. Addressing these requires decentralised, locally embedded delivery models (Korsgaard et al., 2015; Gittins & McElwee, 2023; Astner & Roos, 2024) that incorporate local relational mechanisms to actively connect targeted entrepreneurs into networks (Ramli & Williams, 2024; Bong et al., 2025). In their absence, RMEs continue to adapt through *contingent alignment,* renegotiating *trust-viability threshold*, seeking *pragmatic network fit,* and appropriating technology through *adaptive informalisation* - pragmatic strategies reflecting local agency within structural constraint rather than disengagement.

8.5 IMPLICATIONS FOR DESIGN

Along with the critical discussion of DM platforms, this study is also interested in deriving design implications based on the overall findings. Traditionally, ethnography has been used to surface design implications (Dourish, 2006), through the reflection on 'the work of a setting, particularly what aspects of it cannot be dispensed with and are critical to maintaining and factor into the design' (Crabtree et al., 2012, p.195). This thesis has the opportunity to integrate ethnographic findings from the field, with participatory design outputs co-designed with participants, in arriving at some of the design implications listed below. These implications may be useful for existing platform executives, designers, researchers and funders of DM platforms.

Particular implications to design that such findings should provoke include approaching users and potential forms of use and non-use as pluralities and multi-dimensional. These dimensions will vary across cultures and social groups, adding to the burgeoning case for participatory design approaches with ethnographically-informed co-design in each of the cultural contexts the digital platform is planned to be rolled out in. While this is more time-intensive than the standardised design approach envisioning a homogenous user base, the findings suggest it will enhance the engagement with the technology, inclusivity, consumption and impacts of that engagement.

8.5.1 Designing digital marketplaces with rural micro-entrepreneurs

The first design implication for DM is to involve users in the design process, and in this case, the RMEs. Although this may appear obvious, DM platforms within this study, including those that explicit target RMEs in Sarawak simply have not considered nor have the tools and methodologies to conduct co-design processes with RMEs. The PD workshops conducted across four formats in this thesis, hence could lay as a sample template for future DM platform and designers to be operationalised in engaging rural sellers.

More crucially, efforts to incorporate rural users in DM design must move beyond mere notions of localisation or representational inclusion. Rather than

adapting existing global platforms to local contexts, the findings of this study demonstrate that there is an opportunity to rethink marketplaces all together, as plural sites of cultural negotiation, expression and exchange (Crabtree and Rodden, 2002; Loh et al., 2022). This requires treating cultural expression not as an "add-on" to platform templates, but as a core design logic to imagine different forms of commerce altogether.

In this sense, design not only should enable participation, but foster knowledge co-production (Winschiers-Theophilus et al., 2019), where local actors participate in defining the terms, rhythms and meanings of e-commerce. Such an approach supports pluriversal design futures (Escobar, 2018; Muashekele et al., 2024) where multiple ontologies of economy, value and social life can co-exist, and where decolonial design practices resist the one-size-fits-all paradigm of platform design and economic rationality (Kambunga et al., 2021; Muashekele et al., 2024; Smith et al., 2021).

8.5.2 Designing with local interactional modalities

As prominently feature across the PD workshop, wireframes produced have consistently highlight the various interactional modalities of local RMEs. Such suggestions point to the potential of voice (Islam et al., 2024; Mayor, 2016) that enables naturalistic interaction that mirrors in-person interaction that RMEs are used to. At present most conventional DMs have not incorporated voice as a modality in their interactional features be it between buyers and sellers, or among sellers.

Aside from voice, the ease of informal marketing, seen through the use of Whatsapp 'updates' provides implications for designing accessible marketing and promotional functions for RMEs that is low on compliance burden and technical barriers. The instant messaging features of WhatsApp enable direct communication and negotiation, which are expressly preferred by RMEs, that are unavailable or generally discouraged in formal DM platforms.

Moreover, RMEs also utilise instant messaging platforms as a tool to circumvent power structures within localities, providing them with an informal avenue for commerce that would otherwise require complex

navigation of community protocols. This echoes the negotiation of women entrepreneurs studied by Venugopal and Viswanathan (2021), who exercise agency through micro-enterprising activities within a constrained patriarchal setting.

Overall, DM should reconsider the types of interactions on its existing templates and the relationships they enable and constrain. Consideration should be made to incorporate more naturalistic interactional modalities of local communities, and the forms of communication, such as voice notes and text messages, that better facilitate informal communications that RMEs are more accustomed to.

8.5.3 Seeking Solutions for Tacit, Indigenous, and Embodied Knowledge

One of the main limitations that existing DM platform have is the flattening of embodied knowledge illustrated in Chapter 6. The de-emphasis on indigenous and local knowledge in mainstream DMs not only risks exclusion of valuable local knowledge and practices, but also impacts the sustainability of these knowledge systems as DMs increase in proliferation and adoption (Bong et al., 2025). RMEs described embodied and situated knowledge and practices that included sensory experiences and traditional know-how, much of which is flattened in conventional DMs.

Although literature remains limited due to its burgeoning nature, this preference for ‘live’ and video-based marketplace corresponds with the concept of *entertainment interactivity* and *electronic word-of-mouth* (Andon and Annuar, 2023). The combination of entertainment interactivity of video-based applications, overlayed with e-commerce capabilities on a multi-sited platform, which emerged is described by an elite stakeholder as ‘s*hop-entertainment’*.

The co-design wireframes from the PD workshops points to this potential path. With ‘live video’ features across multiple designs, RMEs and designers communicated the centrality of synchronous video communication in DM platforms that facilitate seller-buyer interaction similar to in-person markets. ‘Live-video’ hence is able to provide an avenue for communicating

indigenous knowledge, albeit a different form of product demonstration and explanation, usually taken up by text in conventional platforms. This could potentially serve as a possible solution to sustaining tacit and embodied knowledge.

8.6 IMPLICATIONS FOR PRACTICE

The findings of this thesis also carry implications for policy and managerial practice, particularly within Sarawak's ongoing commitment to developing its digital economy and fostering digital entrepreneurship. While the state has improved infrastructure, training, and platform availability, the initiatives remain fragmented, techno-centric, and insufficiently aligned with the realities of RMEs. This study provides insights into the challenges and opportunities that can make these strategic developments more impactful.

8.6.1 Ecosystem approaches to digital entrepreneurship initiatives

The findings of DEIs in Sarawak demonstrated a dense but uncoordinated ecosystem. Initiatives are distributed across ministries, agencies, federal-state bodies and higher education institutions, but to date, there has been no shared mechanism to collate their scope of coverage, target groups, and outcome monitoring. This fragmentation creates duplication, overlaps and ineffective targeting, particularly in the overemphasis on Digital Human Capital (DHC) initiatives and the overlooking of Digital Finance and Investment (DFI), as shown in Chapter 4.2.

This is similar to the target groups of the collective initiatives, whereby the lack of coordination between DEIs led to an overemphasis on certain entrepreneurial groups, such as technopreneurs, and the overlooking of RMEs (Chapter 7.3.2). This study shed new light on the overlap of efforts from a federal and state level comparison, and demonstrates the importance of spatial context within entrepreneurial ecosystems proposed by Autio et al. (2014).

There is hence a need for a stronger integrative approach to ecosystem coordination. This can be supported by implementing monitoring

mechanisms that track not only activity (e.g., number of trainings delivered) but also outcomes (e.g. earnings, capability development). The coordination between DEI domains, through cross-ministerial and agency alignment, is also essential, particularly in contexts with multiple ecosystem actors (Zahoro & Banele, 2024). Incentive can also be provided to encourage broader collaboration between universities, NGO, government agencies and private platform providers (Bong and Yunus, 2025; Wawn et al., 2024), which as a result also encourage more stakeholders to participate in the ecosystem outside of government agencies.

Besides this, there is also a need for a more spatially sensitive approach to policy design, especially in a state like Sarawak. This begins through the recognising of specific needs and assets of RMEs that are different from urban and formal businesses, of which this thesis has aimed to provide.
The ecosystem mapping model utilised in this thesis (derived from Isenberg, 2016) provides a replicable mechanism for policymakers to visualise initiative coverage, identify duplication, and align resource allocation with strategic priorities. Integrating this mapping approach into routine planning and review processes would significantly enhance the coherence and effectiveness of the DEI landscape.

8.6.2 Support for non-tech digital entrepreneurship

The thesis also demonstrates that current digital entrepreneurship efforts are disproportionately shaped by a techno-centric model that equates ‘digital entrepreneurship’ with innovation, start-up and technology-driven business models (Chapter 8.2). While investing in technopreneurship is reasonable, this narrow framing has profound implications for wider entrepreneurs, which nonetheless requires substantial investment and capacity building under the digital economy agenda.

The mapping study and interview data show that RMEs often fall outside the scope of existing DEIs because their activities do not align with formalised incubation pathways or high-technology criteria. This results in structural

exclusion from funding, mentorship, capacity-building, and even symbolic recognition at the policy level.

The findings point to a clear need for a more inclusive digital economy, by broadening the policy framing to recognise multiple forms of digital entrepreneurship, including:

- Product-based selling,
- Small service-based enterprises,
- Home-based, seasonal or part-time micro-enterprises
- Indigenous, cultural and collective enterprises

Such reframing is especially important in a state like Sarawak, where business practices are influenced by geographic, infrastructural, and cultural factors, which in turn affect how digital technologies are adopted or avoided. Consideration should also be given to different groups of people, especially in a diverse state like Sarawak, in supporting minority, rural, and indigenous entrepreneurs who are often marginalised under non-targeted initiatives (Memon, 2020; Smith & Owalla, 2023).

Operationally, the implications point to the need for dedicated development pathways for non-tech entrepreneurs, including tailored training, incubation structures and corresponding funding mechanisms that do not privilege technology-intensive business models. Therefore, implementation of training requires:

- Decentralised, place-based models (i.e., support models tailored to the specific practices, capabilities and institutional context of a locality) that enable implementing agencies to adapt support structures, curricula and engagement formats to local needs and cultural norms.
- Flexible funding mechanisms that do not require ‘tech’ features in business models to qualify, addressing the financial exclusion highlighted in Chapters 4 and 7.
- Training approaches grounded in lived practices, through hands-on demonstrations, storytelling and local mentors that supports the relational needs of RMEs.

These shifts align with current scholarship emphasising the importance of contextual, relational, and culturally grounded enterprise support in peripheral regions (Korsgaard et al., 2015; Gittins & McElwee, 2023; Astner & Roos, 2024).

8.6.3 Building Market Access as Entitlements

Findings of this thesis indicate that improving DM participation among RMEs requires a shift from seeing market access as a matter of platform availability to viewing it as market entitlements. For policymakers, this means recognising that RMEs need the institutional and relational arrangements to convert their assets into actual digital sales. Market access, therefore, cannot be achieved through platform provision and generic digital training alone. Logistical pathways, trusted payment channels, visibility, support networks, and brokerage mechanisms (World Bank, 2019) are equally necessary to complete digital exchanges.

From a policy perspective, strengthening DMA therefore requires building market entitlements directly into initiative design. Beyond generic digital literacy, rural digital entrepreneurship efforts ought to engage broader stakeholders within the ecosystem. This includes developing market entitlement structures through closer coordination with logistics providers, payments providers and DM platforms.

Our findings also indicate that RMEs largely depend on social and network capital when selecting technologies and managing business operations. (Spigel, 2016; Viswanathan et al., 2014). This means initiatives ought to build in relational support mechanisms such as locally trained mentors, community intermediaries, and partnerships with established sellers or platform operators, to provide ongoing guidance rather than one-off interventions,

Finally, because entitlements concern not only access but continued participation, monitoring systems should evaluate whether RMEs actually transact and remain active in digital markets. Hence, implementor KPIs should move beyond training numbers or platform sign-ups to more sustained

metrics that better evaluate the ongoing economic impacts of participants, as highlighted by Tham (2023).

8.7 Chapter Summary

This section has discussed the various insights into rural entrepreneurship, the design of DMs and the development of digital entrepreneurship policy that supports RMEs. These insights directly address the gaps identified in Chapter 2 by demonstrating how RMEs' lived realities challenge platform assumptions; how community-led design reimagines DM futures; and how structural and cultural mechanisms necessitate a more reflexive digital entrepreneurship ecosystem.

Foregrounding the voices and experiences of RMEs demonstrates the mismatches between lived experiences with expectations and discourse within DM platforms and digital entrepreneurship literature. In revisiting literature on designing *from the rural*, the findings point to the need to shift this framing to *with the rural.* This is done through viewing RMEs as co-designers of technologies who bring their distinct epistemologies, culture and practices, while being open to co-development *with* the inputs of external experts and stakeholders. The discussion showed that these outputs are capable of informing other rural sites and generating design implications for broader non-rural applications.

Consequently, the discussion calls for a more critically aware and context-sensitive support ecosystem for RMEs in their participation in the digital entrepreneurship ecosystem, of which DMs are situated within. A support system that is not naïve recognises structural inequalities, policy blind spots, and infrastructural asymmetries as key concerns that impact the effectiveness of support RMEs use and adoption of DMs in rural communities.

The implications of this research extend beyond Sarawak, contributing to global debates on how digitalisation can evolve inclusively in places where global platforms encounter diverse local realities. As the findings suggest, local epistemologies must be understood not only as better input modalities but as a provocation to listen and to attend to the lived experiences, rhythms

and interactions of rural entrepreneurs that conventional marketplaces have too often neglected or devalued. This reframing opens new pathways for imagining marketplaces not as uniform infrastructures, but as plural sites of cultural expression, negotiation, and exchange.

9

CONCLUSIONS

This chapter concludes the thesis and summarises the main findings and contributions of this research. An overall summary of the study is provided, followed by a high-level overview of the thesis's contributions to the field of rural micro-entrepreneurship, Human-Computer Interaction (HCI), and digital marketplace (DM) platform studies, in reimagining digital platforms through more inclusive, locally grounded, and participatory design approaches. The chapter then reflects on some of the study's limitations and their implications for our findings. This is coupled with the potential directions for future research that could build upon the insights and advances from this thesis. Finally, an impact statement for the overall PhD is provided, followed by the thesis's concluding remarks.

9.1 SUMMARY

This thesis set out to examine how rural micro-entrepreneurs (RMEs) engage with, and reimagine digital marketplaces (DMs) in rural Sarawak. The work was motivated by the desire to understand how local entrepreneurial practices interact with technologies and their complementary initiatives that are shaped by structural and cultural conditions predominantly embedded with urban-centric, Western-looking assumptions. Existing initiatives in encouraging the adoption of DM platforms have had little success in rural regions in Sarawak, and most, if not all, have not been informed by the grounded realities and experiences of RMEs, which this work sets out to uncover.

This research findings fill three gaps in the literature: first, the lack of an in-depth, ethnographic account of the day-to-day work of RMEs in Malaysia that seeks to understand their engagement with DMs in their situated everyday lives; the second, the limited empirical studies on how locally grounded design imaginaries, elicited through participatory design 'from the rural' (Hardy et al., 2018; Su et al., 2021) could inform and challenge dominant e-commerce platform logics that have defined and legitimised existing forms of DMs (Cutolo and Kenney, 2019). In doing so, the study has facilitated the development of a cultural engagement participatory design approach, enabling an iterative co-design process that enabled RMEs to articulate and co-design DM futures with co-designers (Winschiers et al., 2019). The third is in the identification of mechanisms that led to DM disengagement among RMEs. The critical realist approach adopted added additional explanatory power by accounting for the empirical, the real and the actual, which prior research that relied on more positivist or interpretivist approaches may be less able to (Heeks and Walls, 2018).

Methodologically, the research illustrates how ethnographic sensitivity, participatory design, and critical realist explanation can be combined to yield both empirical depth and explanatory reach. Through the critical realist stance on methodological pluralism, the approach developed here demonstrates how the study move from understanding the *empirical* of RMEs' practices, to eliciting design imaginaries that facilitated events of the *actual*, to uncovering generative mechanisms of the *real* that influence inclusion and exclusion in digital commerce. The cultural engagement PD process further shows how co-design can operate across cultural boundaries while remaining anchored in local epistemologies and worldviews.

The empirical work shows the multiplicity, hybridity and adaptive rural entrepreneurial practices of RMEs in Sarawak, which challenge the neat categorisation of digital entrepreneurship policies and platform ideals of their sellers. Addressing the clear mismatch between platform logics and rural epistemologies, the study reframes RMEs' realities, practices, values and preferences as legitimate design material, and positions RMEs as co-designers of technology that has the agency to influence the technologies that

are to serve their utility. By designing with, instead of for and from the rural, the research has surfaced the various modalities, interactional patterns, local value systems and preferences that are overlooked by WEIRD-centric DM platforms. These insights argue for beginning design from local epistemologies, and accommodating plurality and flexibility that better supports rural participation in digital commerce. The design implications of these findings are informative for both existing DMs, as well as for alternate DMs for future designers.

The findings also reveal how structural, cultural and agentic mechanisms continually shaped, constrained and enabled RMEs' engagement with DMs. These include the platform formalism and entrepreneurship gatekeeping of DM, the policy and initiative oversights that exclude RMEs, the infrastructural constraints and cultural mismatch of the supportive ecosystem with rural realities. Additionally, the study identified the social interaction mechanisms that RMEs enact within these structural conditions, namely deferred participation, resistance and rejection, and bounded adoption and appropriation of digital technologies to subvert DM assumptions. The outcomes of which explains the disengagement of RMEs with DM platforms, and the predominant morphostasis of DM adoption.

In bringing these discussions together, the thesis calls for a support ecosystem that is not naïve, one that recognises the structural, cultural and agentic mechanisms that influence rural digital engagement. This entails the acknowledgment that technocratic framings of digital transformation and entrepreneurial citizenship constrain participation and reproduce inequalities, especially among those without the privileges of the urban, the middle-class, and the digitally savvy (Irani, 2015; Thies, 2015). The implications from this study have relevance beyond Sarawak, in that they underscore the need for DM design and digital entrepreneurship policies to be more inclusive in their considerations, and to be more grounded in local realities that require attentive processes and methodologies.

9.2 MAIN CONTRIBUTIONS

In-line with the research questions listed in Chapter 1, this thesis makes the following five main contributions.

6. **The first ethnographic research of rural micro-entrepreneurs in Sarawak, grounding empirical findings of rural micro-entrepreneurship from the region, and reframes digital entrepreneurship beyond technocratic framings**

   The thesis presents the first ethnographic account of RMEs in Sarawak. Building on previous ethnographic studies in the rural (Chamberlain and Crabtree, 2015; Venugopal and Viswanathan, 2021), the thesis revealed how DM technologies are engaged with through the situated practices of RMEs. These findings challenge dominant assumptions in digital entrepreneurship discourse (Irani, 2015; Sussan and Acs, 2019) and DM models (Grabher and König, 2020), offering a more substantive (Polanyi, 1944) and grounded basis for entrepreneurship policy, platform design, and the entrepreneurship ecosystem development.

7. **Demonstrating the misalignments of existing digital marketplace design for rural commerce, and introducing pluriversal marketplace alternatives through participatory design**

   Through participatory design workshops, the thesis exposes the Western-centric assumptions and design logics embedded in mainstream digital marketplaces (Bong et al., 2025), illustrating how they risk subverting existing local practices, values and modalities. Alternative DM imaginaries rooted in RME's cultural, interactional and embodied practices were also co-developed. The findings call for DM design discourse to better include rural epistemologies and local interactional culture (Loh et al., 2023; Hobbis and Hobbis, 2023; Cutolo and Kenny, 2019).

8. **Advancing *rural computing* literature by 'designing with the rural', drawing from the *Cultural Engagement Approaches* from *participatory design* scholarship**

   This thesis advances *rural computing* scholarship by recasting its central framing of 'designing *from* the rural' (Hardy et al., 2018; 2019) to 'designing *with* the rural', proposing a PD framework as a methodological approach. By adapting the *Cultural Engagement Approaches* (Winschiers-Theophilus et al., 2019; Muashakele et al., 2023a), the thesis contributes methodological to rural computing through PD approaches in co-designing in diverse rural configurations for rural and indigenous entrepreneurship settings.

9. **Explaining digital marketplace platform disengagement through a morphogenetic/ morphostatic analysis of structure, culture and agency**

   This thesis contributes an explanatory account of DM disengagement among RMEs. By operationalising Archer's morphogenetic/ morphostatic framework (Archer, 1995), it demonstrates how *platform formalism and entrepreneurship gatekeeping, policy and initiative oversight* and *infrastructural mismatch* form the structural and cultural conditionings that precede RMEs' encounters with DMs. It also identifies *contingent alignment, trust–viability threshold, pragmatic network choice* and *adaptive digital informalisation* as generative mechanisms that explain the deferred participation, rejection and resistance, bounded adoption and informal digital workaround among RMEs. In doing so, it reframes rural DM disengagement as a morphostatic outcome of specific context-conditioned mechanisms, offering transferable analytical lens for examining platform participation in other underserved contexts.

10. **Mapping the digital entrepreneurship initiative ecosystem in Sarawak by adapting Isenberg's entrepreneurship ecosystem framework (2016)**

The mapping of Sarawak's DEI is the first comprehensive study of the its ecosystem in the state, using an adapted Isenberg framework of entrepreneurship ecosystem (2016). The study revealed significant fragmentation between initiators, and a marginalisation of RMEs, providing policy and managerial implications in Sarawak. The mapping framework also contributes to digital entrepreneurial ecosystem scholarship (Sussan and Acs, 2017; Bejjani et al., 2023).

This work presents new empirical findings to current literature in the HCI's study of e-commerce, which are primarily concentrated in the Global North. The work also contributes to the rural computing through co-designing DMs with RMEs in Sarawak using PD approaches. The outcome of the research is directed towards design implications of DMs and digitalisation development strategies for supporting and accommodating the needs of RMEs, providing an inclusive and equitable means for participating in the digital economy.

9.3 LIMITATIONS AND FUTURE WORK

This thesis has aimed to surface an understanding of RMEs' everyday practices and rationales, in supporting a more equitable and participatory approach to understanding DM design, while uncovering the broader structures at play in influencing engagement. Nonetheless, a number of limitations must be considered and reflected in interpreting the findings and implications of this research. These limitations are discussed below:

9.3.1 Situatedness of Empirical Findings

A key strength of ethnographic study is its situatedness within specific communities and with specific people. The depth of qualitative understanding obtained through being immersed in specific contexts has been the key advantage of employing ethnography in research. The empirical data of this study were obtained from the five research sites and from three main indigenous communities, that includes the ethnographic studies and

participatory design workshop findings, both situated within or around the specific research sites where the researcher had been conducting fieldwork.

With that said, the study cannot and does not claim generalisability across all rural sites in Sarawak. There are other rural sites within Sarawak that the study could be extended to, including remote regions only accessible by rivers, logging trails, flights, or a combination of them, where other indigenous ethnic groups reside and practice commerce. The study, however, has complemented the ethnographic findings with multiple data sources to mitigate the limitations of the situatedness of the primary observational findings, in seeking to explain why rural communities within the observed settings, do not engage with DM platforms.

Future work could build on existing findings by extending, for example, the participatory design workshops to different rural sites and ethnic groups. Particularly interesting would be the conducting of 'futuring' workshops across different rural communities in eliciting technology futures based on local imagination, context and aspirations.

9.3.2 Micro-entrepreneur sampling

The study primarily worked with lower-income groups within the micro-entrepreneur category. The micro-enterprise selection criteria used was an annual revenue of less than RM300,000, although all the participants fit this criterion, they were of the lower quartile of the spectrum. The majority of participants had annual revenue of less than RM30,000, while many politely declined to declare. Although this provided much-needed representation and rich empirical findings of lower-income micro-entrepreneurs in Sarawak, the overall findings may more accurately represent subsistence entrepreneurs within the micro-entrepreneur category.

In striving for an ethical and respectful approach to sampling, the study adhered to the cultural and interactional protocols laid out by Loh et al. (2022) as closely as possible. This meant that, upon accessing, sampling was primarily conducted through snowball sampling from key informants or community leaders, which shaped the observations of this study.

Future research could explore purposive sampling that focuses on the upper and middle percentiles of micro-entrepreneurs where annual enterprise turnover is closer to the upper limit of RM300,000 and the median of RM200,000 per year through a more selective sampling approach. This could be extended to the existing rural local communities of this study given the established working experience with the community.

9.3.3 Platform Development and Testing

This study did not proceed with applying the findings to platform development and user testing, although both the ethnography and participatory design workshops have generated important implications for design. HCI scholars have shown that the development of technology, even within HCI studies, is not always necessary, and in many cases are discouraged from doing so (Dourish, 2006), as too early and simplistic a design intervention could reduce complex technological challenges into narrow, unsustainable solutionism (Baumer and Silberman, 2011). Indeed, developing DM platforms was not one of the thesis's main goals, and could distract from the primary contribution of emphasising the shortcomings of existing DM models that disadvantage RMEs and their practices.

On future work, the thesis has nevertheless provided important insights for the future development of DMs for RMEs. These insights would contribute to both the adaptation of conventional DM platforms to be more inclusive and respectful of local values or to the design of completely alternative DM avenues that intentionally deviate from mainstream ones, providing platforms that configure around local imaginaries and practices rather than dominant global templates.

9.4 IMPACT STATEMENT

While the PhD's aims are on academic research, the potential impact of the work has also been considered throughout and post-PhD. '*Impact*' here refers to the UK Research and Innovation (UKRI) definition that centres on demonstrable 'effect, change or benefit' that research delivers to 'the economy, society, culture, public policy or services, health, the environment

or quality of life, beyond academia' (Research Excellence Framework, 2021, p. 90). The goal of impact aligns with the research motivation of this PhD: supporting RMEs in developing their digitalisation capabilities while seeking to better understand their work through co-producing solutions grounded in their experiences. Below is the list of impact activities, funded by impact funds that the researcher has obtained across various university departments.

9.4.1 Integrating Digital Business Training with PD Workshops

As part of the PD workshops conducted in Padawan and Bawang Assan, a digital business training was conducted. Participants, mainly with low to no digital literacy, receive customised training in digital marketing, e-commerce operations, and digital business, explicitly requested by RMEs. The workshops were co-developed with local informants familiar with the target groups to ensure the content is relevant and applicable to the local context.

Additionally, the workshops also included various local stakeholders, including tech designers, digital marketplace owners, and government officials. Their participation enabled the training session to incorporate stakeholder perspective, while enabling local communities to network with stakeholders for post-training communication. A total of £750 was awarded by the School of Computer Science from its 'Impact Fund', which supported the cost of training materials, catering as well as participant remuneration.

The training workshops have observably enhanced the exposure of RMEs to various digital avenues and DM platforms, while also reducing the barriers of engaging with digital platforms as identified through prior ethnographic observations. One of the participants expressed that she 'no longer fears platforms' after the training, illustrating the impact of the training sessions that are conducted within the community and that engage participants in a locally appropriate approach (described in Chapter 6).

9.4.2 Participation of RMEs at International Conference

The second impact activity was the funding of five local RMEs to the Participatory Design Conference 2024 in Sibu, Sarawak. The funding came

from Asia Research Institute, and the Horizon Centre of Doctoral Training's '*Small Activity Impact Grant',* whereby both funded £500 each.

The theme of the conference was 'Reaching Out: Connecting Beyond Participation', advocating for participation beyond the traditional "connoisseurs" of the discipline, including wider stakeholders such as government, marginalised communities and underserved people groups. Five local Sarawakians from the Iban and Bidayuh tribe, two of the most significant indigenous tribes in Sarawak were able to participant in the full-day workshop, where they act as local informants and knowledge experts in the morning session, leading and teaching the wider participant groups on local knowledge of the Sibu Central Market, and the variety of tacit understandings of local produce and ways of purchasing, which are key data points for co-designing a DMs.

Aligning with the conference theme of 'Reaching Out', the activity has facilitated the inclusion of traditionally excluded communities of research and technological design, specifically the indigenous and rural communities of Sarawak. As part of the conference workshop, the local participants were also invited to the formal dinner reception. Their inclusion at the formal dinner reception was impactful in providing them the opportunity to attend as guest in an international event held in their local town. It was also impactful for them in that the event allowed them to meet key government leaders such as the state premier and mayor of Sibu. The workshop has benefited local participants by providing them with the opportunity to influence research that impacts their lives, while providing a platform for local challenges to be collectively debated amongst various stakeholders on an international stage for both raising awareness and for solution-finding.

9.4.3 Post-PhD Engagement in Long Semadoh

Following the impact from the training workshops above, a larger grant was awarded that enabled the researcher to return to Sarawak in December 2025 to conduct a tailored rural business training in Long Semadoh. The impact grant awarded by the Horizon Centre of Doctoral Training totalled £13,000, which, aside from covering staffing and travel costs, allowed for the

participation of a local marketing and branding company in bringing a longer-term impact to local RMEs in Long Semadoh. The activities plan include the conducting of an in-person 2-day workshop focusing on supporting local RMEs with their branding and marketing challenges. In collaboration with the marketing company, tailored branding and digital marketing assets would be produced with the RMEs. This would be followed by a 3-month consultancy post-engagement to provide continuous support to participants and maximise the impact of their engagement.

The researcher is thankful for the funders' support in enabling the conduct of the digital business training in various parts of rural Sarawak, thereby extending the research's impact from purely academic to practical and applicable to the local RMEs that have engaged in this research.

9.5 CONCLUDING REMARKS

With 43% of the global population living in rural areas (World Bank, 2025), most of them in developing countries, it is imperative that scientific research attend to the needs and aspirations of nearly half of the world's people. Rural regions across both the Global North and South are often characterised and viewed through a deficit lens, regions that lack infrastructure, stable connectivity, and access to markets. Yet these same regions hold immense social, cultural, and ecological assets that not only make them unique, but are often what many in urban societies strive for: tight-knit communities, neighbourliness, physical safety and deep connection to land and nature. As new generations in the digitally connected world grow up with an increasing reliance on digital devices, the less connected continue to rely on their literal social networks for community, connection, and information. This is not to romanticise rurality, but to recognise the valuable assets that complicate representations of the rural, challenging overly deficit narratives that indeed have much to offer to many of their digitally connected, urban counterparts.

This thesis centres the inquiry on the rural, the geographically remote communities of rural Sarawak, to reveal the tapestry of rural micro-entrepreneurship practices, situated actions, collective values, and innovative

design imaginaries that shape their everyday life. Through this grounding, the thesis demonstrates rural contexts as important sites for studying digital entrepreneurship and DM engagement, as well as how digital participation can be designed *from* and *with* RMEs. The work shows how local epistemologies, practices and shared beliefs are valuable for theory-building and scholarship, that more of these situated perspectives are needed, not less, in enriching the global discourse on DM platforms, rural entrepreneurship and rural technology design.

By uncovering the structural, cultural and agentic mechanisms that condition DM engagement, this thesis affirms that meaningful digital empowerment needs to begin with careful attention— listening to the market cries of RMEs, observing how they coordinate paddy harvesting, hearing the aspirations of parents for their next generation, and recognising to the frustration of those unable to advance their businesses due to childcare and family commitments. These are not just considerations for more 'inclusive' policy and platform design. In light of the persistent lack of DM engagement and the generative mechanisms identified in this thesis, they may well be essential for achieving more effective outcomes.

As digitalisation continues to be the prevailing development direction globally, with more sophisticated and consequential technologies carrying greater contested ideologies and ethical tensions, the findings from Sarawak offer a crucial reminder to recognise plurality and multiplicity as valuable in design and research. The diverse ways of doing, organising, transacting, exchanging and innovating should not be designed away in an increasingly technocratic world. Instead, they should be recognised, valued and positioned as essential assets and resources for shaping technological futures and for sustaining local communities.

PART IV

Appendixes and Bibliography

A

ADDITIONAL FIELDWORK DOCUMENTS

Included in this appendix are additional documentation relating to the study:

- Appendix A.1 is the information sheet and consent form given to participants prior to the study, in English and Malay.
- Appendix A.2 is the demographic survey, in English and Malay.
- Appendix A.3 is the set of semi-structured interview questions.

A.1 INFORMATION SHEET & CONSENT FORM

A.1.1 *Information Sheet & Consent Form (English)*

School of Computer Science
University of Nottingham

Section B. Information to be provided to research participants

PROJECT TITLE: An ethnographic study of micro-enterprise and digital marketplaces in rural Sarawak

1. The research

a) Aims and objectives of the research

Digital technologies, including digital marketplaces, have been primarily designed from and for an urban, well-connected, and digitally sophisticated audience. These technologies are often transferred into rural settings with little consideration of the local, social, organisational and technological context, leading to low adoption or short-live uptake.

This research aims to understand the work of rural microenterprises and to study how digital marketplaces supports microenterprise in rural Sarawak. By engaging a range of different stakeholders across governmental agencies, digital platform managers, NGOs, entrepreneurs and community members, it seeks to explore the motivation, design and deployment of digital marketplaces in rural Sarawak. The results of the study will be drawn on to inform co-design implications for the development of digital marketplaces suited to the context of rural communities.

b) Funder information

This research is funded by The EPSRC Centre for Doctoral Training in Horizon: Creating our Lives in Data, supported by the Engineering and Physical Sciences Research Council (EPSRC) under grant reference EP/S023305/1.

https://gow.epsrc.ukri.org/NGBOViewGrant.aspx?GrantRef=EP/S023305/1

c) Governance

This research has been approved by the School of Computer Science Research Ethics Committee (CS REC) ethics application ID CS-2022-R40

2. Taking part in the research

If you agree to take part in our research, you will first need to read the rest of this form and sign it to say you consent to our **gathering data** about your perspective (your experience or thoughts, feelings, views, etc.) on digital marketplaces in rural Sarawak.

After that, the researcher will ask you to do one of the following things:

1. Complete a short **questionnaire**. The questionnaire will collect demographic information about you (but does not document your real name or identity in anyway), information about your familiarity with digital marketplaces, and information about your knowledge and views on digital marketplaces.
2. Take part in an **interview**. The interview will discuss your familiarity, experiences and views on digital marketplaces. The interview should take between 20 minutes and 1 hour to complete, with the actual duration determined by your availabilities and pace.
3. Take part in an **ethnographic** study. This involves allowing the researcher to accompany you and observe the everyday activities involved in the conduct of microenterprise and / or the use of digital marketplaces. The researcher will gather fieldnotes, photographs and video recordings to support subsequent analysis. This data will be stored securely and be anonymised before it is used in any scientific works to protect your identity. The period of study is entirely up to you. It may be a few hours or take place over several days.

3a. If you agree to take part in video recording, it is up to you what is recorded. You have complete control and can both start and stop it whenever you want. The purpose of video recording is to drill down into how you do particular activities involved in your work and the resources involved. This helps us analyse everyday activities in greater detail than we can with questionnaires and interviews.

4. Take part in a **workshop**. You will be invited to participate in the **participatory workshop**, which is a single day event consisting of two workshops, and a refreshment break. During the workshop, participants will be working as a group on a design task of designing a digital platform technology for commerce that meets the needs and context of the local microenterprise community.

We will seek approval from your management team if it is needed before you take part in the research.

3. Risks of participation

a) Risks

There is always a risk of unauthorised access to data.

b) Mitigation of risks

See section 5 for the measures we put in place to mitigate the risk of unauthorised access.

4. Purpose of data processing

a) Data collected

We collect the following categories of data during your participation in the research:

i. Questionnaire data
ii. Interview data (audio recording)
iii. Photo data
iv. Video data
v. Fieldnotes
vi. Notes made by participants in workshops

b) Specific purposes for which the data are processed

Data collected during the research that identifies you may be:

- Analysed to meet the aims and objectives described in Section 1.
- Reviewed and discussed in supervision sessions between researchers and their supervisors or in research meetings between members of the research team, including project partners.
- If audio recordings are collected during the research, these may be transcribed and **anonymous** quotations of your spoken words may be used in scientific works, including presentations, reports and publications stored in databases and posted online, and in marketing materials that promote the research and its findings.
- If visual images that identify you are collected during the research, they may be used in scientific works, including presentations, reports and publications stored in databases and posted online, and in marketing materials that promote the research and its findings; you will **not** be named if visual data is used for these purposes and you may **opt out** in Section 9b.

c) Automated decision-making and profiling

N/A (delete after approval)

d) Legal basis for processing your data

We collect personal data under the terms of the University of Nottingham's Royal Charter and in our capacity as a teaching and research body to advance education and learning. We thus process your data on the legal basis that our research is in the public interest, we have legitimate interests and / or that you consent to data processing in freely and voluntarily participating in our research activities.

5. Storage and retention of your data

a) Data protection measures

We put the following organisational and / or technical safeguards in place to protect your data and your identity to the best of our ability:

All data stored digitally will be encrypted and password-protected and all physical data will be stored in a secure location. Audio recordings will be transcribed (pseudonyms will be used to anonymise participants identities) and then be deleted. Questionnaire responses will be digitised and paper forms will then be destroyed (shredded).

b) Retention period

Data protection law allows us to retain personal data for an indefinite period and use it in future for public interest, scientific or historical research purposes or statistical purposes, subject to the implementation of technical and organisational measures that safeguard your data, your legal rights and your freedoms. These safeguards include the storage measures described above to protect your data against unauthorised access, and de-identification (anonymisation or pseudonymisation) of your data wherever possible and practicable. Data that identifies or could identify you will not be made public without your consent.

6. Third party recipients, services and data transfers

a) Project partners

Your data will not be shared with other parties.

b) Third-party services

Your data will not be shared with third-party services.

c) Data transfers

Your data will transferred to the UK only and is protected by the Data Protection Act 2018.

7. Your legal rights

Data protection rights (Data Protection Act 2018)

You have the right:

- To be informed about the collection and use of personal data (as per this document).
- To access and receive a copy of your personal data, and other supplementary information, on request.
- To object to and restrict data processing if you think we are not complying with data protection law, and to rectify inaccuracies.
- To be forgotten, i.e., to have your personal data erased.
- To data portability and to obtain your data in an accessible and machine-readable format if appropriate, or to transfer your data to another organisation if technically feasible.
- To complain to about the way we process your personal data to our ethics committee (cs-ethicsadmin@cs.nott.ac.uk), our Data Protection Officer (dpo@nottingham.ac.uk) or the Information Commissioner's Office (https://ico.org.uk/make-a-complaint).*

Joint authorship in copyright works (Copyright, Designs and Patents Act 1988)

You may, if you wish, be acknowledged and publicly identified as joint author of the interview recording or video of your involvement in the ethnographic study. **Affirming your right to be acknowledged as joint author may affect your anonymity.**

8. Your ethical rights

a) Right to withdraw

You have the right to withdraw from the research at any time without explanation. You also have the right to request that your data be deleted if you do withdraw.

b) Handling of 'mixed' data

If the data is 'mixed' data – i.e., if it involves other people (not including the researchers), e.g., a conversation or video of multi-party interaction – it cannot be deleted unless **all parties** request it. However, any mixed data involving you will be redacted wherever possible, with the exception of scientific works produced prior to your notification of withdrawal.

c) Withdrawal procedure

If you wish to withdraw, please notify Yang Bong either at:

Email: Yang.Bong@nottingham.ac.uk

Mobile: *+60178556841*

Whatsapp: +447438016040

If you do not receive confirmation of withdrawal from the research, please email: cs-ethicsadmin@cs.nott.ac.uk

9. Consent to participate

a) I consent to participate in the research and my signature or mark confirms the following: • I understand the aims and objectives of the research • I understand what the research requires me to do • I accept the risks of participation • I understand what data will be collected and the purposes for which the data will be used • I understand safeguards will be put in place to protect my data and my legal rights	*Signature or mark:*

* Our DPO's postal address is Data Protection Officer, Legal Services, A5 Trent Building, University of Nottingham, University Park, Nottingham NG7 2RD.

• I understand I will not be identified unless the use of identifiable data has been requested and I consent to it • I understand that I can withdraw at any time without explanation • I have been able to ask questions about the research, my participation, and my data and my questions have been answered satisfactorily • I agree to participate and my participation is voluntary	
b) Questionnaire opt-in. I agree to complete a questionnaire. I understand the data collected will not identify me.	*Signature or mark:*
c) Interview opt-in. I agree to take part in an interview with the researcher and that an audio recording of the interview will be made to support subsequent analysis. I understand this audio data will not be made public or be posted online but that anonymous quotations may be used to communicate the research.	*Signature or mark:*
d) Ethnographic study opt-in. I agree to take part in an ethnographic study to help the researchers understand the everyday activities involved in the conduct of microenterprise and / or the use of digital marketplaces. I understand and photographic or audio-video recordings will not be made public or be posted online, but that anonymised images in which my identity is obscured may be used to communicate the research.	
e) Workshop opt-in. I agree to take part in the workshop with the researcher and that an audio-video recording of the workshop will be made to support subsequent analysis. I understand this audio and video data will not be made public or be posted online but that anonymous quotations may be used to communicate the research. I understand too that notes provided by participants may also be collected and used anonymously in the research.	*Signature or mark:*
f) Copyright opt-in. I wish to affirm my right to be acknowledged as joint author of original works (interview and video data) created in this research. **I understand this may affect my anonymity**	*Signature or mark:*
OPT-OUT. I do not consent to use of my visual image in scientific works or materials that promote the research and its results	*Signature or mark:*
Name of participant(s)	
Date	
Witness *If participant(s) cannot sign*	*In signing I confirm the participant(s) named above have been fully informed about the research, have been able to ask questions, and consent freely.*

(v.9 August 2022)

A.1.2 *Information Sheet & Consent Form (Malay)*

Pusat Pengajian Sains Komputer
Universiti Nottingham

Bahagian B. Maklumat yang perlu diberikan kepada peserta penyelidikan

TAJUK PROJEK: Kajian etnografi mengenai perusahaan mikro dan pasaran digital di luar bandar Sarawak

1. Penyelidikan

a) Matlamat dan objektif penyelidikan

Teknologi digital, termasuk pasaran digital, telah direka bentuk terutamanya daripada dan untuk khalayak bandar, yang mempunyai hubungan baik dan canggih secara digital. Teknologi ini sering dipindahkan ke persekitaran luar bandar dengan sedikit pertimbangan konteks tempatan, sosial, organisasi dan teknologi, yang membawa kepada penggunaan rendah atau pengambilan jangka pendek.

Penyelidikan ini bertujuan untuk memahami kerja perusahaan mikro luar bandar dan untuk mengkaji bagaimana pasaran digital menyokong perusahaan mikro di luar bandar Sarawak. Dengan melibatkan pelbagai pihak berkepentingan yang berbeza merentasi agensi kerajaan, pengurus platform digital, NGO, usahawan dan ahli komuniti, ia berusaha untuk meneroka motivasi, reka bentuk dan penggunaan pasaran digital di luar bandar Sarawak. Hasil kajian akan diambil untuk memaklumkan implikasi reka bentuk bersama untuk pembangunan pasaran digital yang sesuai dengan konteks masyarakat luar bandar.

b) Maklumat pembiaya

Penyelidikan ini dibiayai oleh The EPSRC Centre for Doctoral Training in Horizon: Creating our Lives in Data, disokong oleh Majlis Penyelidikan Kejuruteraan dan Sains Fizikal (EPSRC) di bawah rujukan geran EP/S023305/1.

https://gow.epsrc.ukri.org/NGBOViewGrant.aspx?GrantRef=EP/S023305/1

c) Tadbir urus

Penyelidikan ini telah diluluskan oleh aplikasi etika Jawatankuasa Etika Penyelidikan Sains Komputer (CS REC) ID CS-2022-R40

2. Mengambil bahagian dalam penyelidikan

Jika anda bersetuju untuk mengambil bahagian dalam penyelidikan kami, anda perlu membaca seluruh borang ini terlebih dahulu dan menandatanganinya untuk menyatakan bahawa anda bersetuju dengan **pengumpulan data kami** tentang perspektif anda (pengalaman atau pemikiran, perasaan, pandangan, dsb.) anda pada digital pasaran di luar bandar Sarawak.

Selepas itu, penyelidik akan meminta anda melakukan salah satu daripada perkara berikut:

1. **Soal selidik** ringkas . Soal selidik akan mengumpulkan maklumat demografi tentang anda (tetapi tidak mendokumenkan nama sebenar atau identiti anda), maklumat tentang kebiasaan anda dengan pasaran digital dan maklumat tentang pengetahuan dan pandangan anda tentang pasaran digital.
2. Ambil bahagian dalam **temu bual** . Temu bual akan membincangkan kebiasaan, pengalaman dan pandangan anda tentang pasaran digital. Temu duga harus mengambil masa antara 20 minit dan 1 jam untuk diselesaikan, dengan tempoh sebenar ditentukan oleh ketersediaan dan kelajuan anda.
3. Mengambil bahagian dalam kajian **etnografi** . Ini melibatkan membenarkan penyelidik menemani anda dan memerhati aktiviti harian yang terlibat dalam pengendalian perusahaan mikro dan/atau penggunaan pasaran digital. Pengkaji akan mengumpulkan nota lapangan, gambar dan rakaman video untuk menyokong analisis seterusnya. Data ini akan disimpan dengan selamat dan dirahasiakan sebelum ia digunakan dalam mana-mana kerja saintifik untuk melindungi identiti anda. Tempoh pengajian terpulang kepada anda sepenuhnya. Ia mungkin beberapa jam atau berlaku selama beberapa hari.

3 a. Jika anda bersetuju untuk mengambil bahagian dalam rakaman video, terpulang kepada anda apa yang dirakamkan. Anda mempunyai kawalan sepenuhnya dan boleh memulakan dan menghentikannya pada bila-bila masa anda mahu. Tujuan rakaman video adalah untuk menelusuri bagaimana anda melakukan aktiviti tertentu yang terlibat dalam kerja anda dan sumber yang terlibat. Ini membantu kami menganalisis aktiviti harian dengan lebih terperinci daripada yang kami boleh dengan soal selidik dan temu bual.

4. Ambil bahagian dalam **bengkel** . Anda akan dijemput untuk mengambil bahagian dalam **bengkel penyertaan** , yang merupakan acara sehari yang terdiri daripada dua bengkel, dan rehat ringan. Semasa bengkel itu, para peserta akan bekerja sebagai satu kumpulan dalam tugas reka bentuk mereka bentuk teknologi platform digital untuk perdagangan yang memenuhi keperluan dan konteks komuniti perusahaan mikro tempatan.

Kami akan mendapatkan kelulusan daripada pasukan pengurusan anda jika ia diperlukan sebelum anda mengambil bahagian dalam penyelidikan.

3. Risiko penyertaan

a) Risiko

Sentiasa terdapat risiko capaian tanpa kebenaran kepada data.

b) Pengurangan risiko

Lihat bahagian 5 untuk langkah-langkah yang kami lakukan untuk mengurangkan risiko akses tanpa kebenaran.

4. Tujuan pemprosesan data

a) Data yang dikumpul

Kami mengumpul kategori data berikut semasa penyertaan anda dalam penyelidikan:

i. Data soal selidik
ii. Data temu bual (rakaman audio)
iii. Data foto
iv. Data video
v. Nota lapangan
vi. Nota yang dibuat oleh peserta dalam bengkel

b) Tujuan khusus untuk data diproses

Data yang dikumpul semasa penyelidikan yang mengenal pasti anda mungkin:

- Dianalisis untuk memenuhi matlamat dan objektif yang diterangkan dalam Bahagian 1.

(v.9 Ogos 2022)

(v.9 Ogos 2022)

- Disemak dan dibincangkan dalam sesi penyeliaan antara penyelidik dan penyelia mereka atau dalam mesyuarat penyelidikan antara ahli pasukan penyelidik, termasuk rakan kongsi projek.
- Jika rakaman audio dikumpul semasa penyelidikan, ini mungkin ditranskripsi dan petikan **tanpa nama** bagi perkataan lisan anda boleh digunakan dalam karya saintifik, termasuk pembentangan, laporan dan penerbitan yang disimpan dalam pangkalan data dan disiarkan dalam talian, dan dalam bahan pemasaran yang mempromosikan penyelidikan dan penemuan.
- Jika imej visual yang mengenal pasti anda dikumpul semasa penyelidikan, ia mungkin digunakan dalam karya saintifik, termasuk pembentangan, laporan dan penerbitan yang disimpan dalam pangkalan data dan disiarkan dalam talian, dan dalam bahan pemasaran yang mempromosikan penyelidikan dan penemuannya ; anda **tidak** akan dinamakan jika data visual digunakan untuk tujuan ini dan anda boleh **menarik diri** dalam Bahagian 9b.

c) Pembuatan keputusan dan pemprofilan automatik

N/ A (padam selepas kelulusan)

d) Asas undang-undang untuk memproses data anda

Kami mengumpul data peribadi di bawah syarat-syarat Piagam Diraja Universiti Nottingham dan dalam kapasiti kami sebagai badan pengajaran dan penyelidikan untuk memajukan pendidikan dan pembelajaran. Oleh itu, kami memproses data anda atas dasar undang-undang bahawa penyelidikan kami adalah untuk kepentingan awam, kami mempunyai kepentingan yang sah dan/atau anda membenarkan pemprosesan data secara bebas dan sukarela mengambil bahagian dalam aktiviti penyelidikan kami .

5. Penyimpanan dan pengekalan data anda

a) Langkah perlindungan data

Kami meletakkan perlindungan organisasi dan/atau teknikal berikut untuk melindungi data anda dan identiti anda dengan sebaik mungkin:

Semua data yang disimpan secara digital akan disulitkan dan dilindungi kata laluan dan semua data fizikal akan disimpan di lokasi yang selamat. Rakaman audio akan ditranskripsikan (nama samaran akan digunakan untuk menamakan identiti peserta) dan kemudian dipadamkan. Jawapan soal selidik akan didigitalkan dan borang kertas kemudiannya akan dimusnahkan (dicincang).

b) Tempoh pengekalan

Undang-undang perlindungan data membenarkan kami untuk menyimpan data peribadi untuk tempoh yang tidak ditentukan dan menggunakannya pada masa hadapan untuk kepentingan awam, tujuan penyelidikan saintifik atau sejarah atau tujuan statistik, tertakluk kepada pelaksanaan langkah teknikal dan organisasi yang melindungi data anda, hak undang-undang anda dan anda. kebebasan. Perlindungan ini termasuk langkah storan yang diterangkan di atas untuk melindungi data anda daripada akses yang tidak dibenarkan dan nyahpengenalpastian (tanpa nama atau nama samaran) data anda di mana mungkin dan boleh dilaksanakan. Data yang mengenal pasti atau boleh mengenal pasti anda tidak akan didedahkan kepada umum tanpa kebenaran anda.

6. Penerima pihak ketiga, perkhidmatan dan pemindahan data

a) Rakan kongsi projek

Data anda tidak akan dikongsi dengan pihak lain.

b) Perkhidmatan pihak ketiga

Data anda tidak akan dikongsi dengan perkhidmatan pihak ketiga.

c) Pemindahan data

Data anda akan dipindahkan ke UK sahaja dan dilindungi oleh Akta Perlindungan Data 2018.

7. Hak undang-undang anda

Hak perlindungan data (Akta Perlindungan Data 2018)

Anda mempunyai hak:

- Untuk dimaklumkan tentang pengumpulan dan penggunaan data peribadi (mengikut dokumen ini).
- Untuk mengakses dan menerima salinan data peribadi anda, dan maklumat tambahan lain, atas permintaan.
- Untuk membantah dan menyekat pemprosesan data jika anda fikir kami tidak mematuhi undang-undang perlindungan data, dan untuk membetulkan ketidaktepatan.
- Untuk dilupakan, iaitu, data peribadi anda dipadamkan.
- Untuk kemudahalihan data dan untuk mendapatkan data anda dalam format yang boleh diakses dan boleh dibaca oleh mesin jika sesuai, atau untuk memindahkan data anda ke organisasi lain jika boleh secara teknikal.
- Untuk mengadu tentang cara kami memproses data peribadi anda kepada jawatankuasa etika kami (cs-ethicsadmin@cs.nott.ac.uk), Pegawai Perlindungan Data kami (dpo@nottingham.ac.uk) atau Pejabat Pesuruhjaya Maklumat (https://ico.org.uk/make-a-complaint). *

Pengarang bersama dalam karya hak cipta (Akta Hak Cipta, Reka Bentuk dan Paten 1988)

Anda boleh, jika anda mahu, diiktiraf dan dikenal pasti secara terbuka sebagai pengarang bersama rakaman temu bual atau video penglibatan anda dalam kajian etnografi . **Mengesahkan hak anda untuk diiktiraf sebagai pengarang bersama boleh menjejaskan ketaknamaan anda.**

8. Hak etika anda

a) Hak untuk menarik diri

Anda mempunyai hak untuk menarik diri daripada penyelidikan pada bila-bila masa tanpa penjelasan. Anda juga mempunyai hak untuk meminta data anda dipadamkan jika anda menarik diri.

b) Pengendalian data 'campuran'

Jika data adalah data 'campuran' – iaitu, jika ia melibatkan orang lain (tidak termasuk penyelidik), cth, perbualan atau video interaksi berbilang pihak – ia tidak boleh dipadamkan melainkan semua pihak **memintanya** . Walau bagaimanapun, sebarang data bercampur yang melibatkan anda akan disunting di mana mungkin, kecuali karya saintifik yang dihasilkan sebelum pemberitahuan penarikan diri anda.

c) Prosedur pengeluaran

Jika anda ingin menarik diri, sila maklumkan kepada Yang Bong sama ada di:
E-mel: Yang.Bong@nottingham.ac.uk
No. Telefon: *+60178556841*
Whatsapp: +447438016040
Jika anda tidak menerima pengesahan penarikan diri daripada penyelidikan, sila e-mel:
cs-ethicsadmin@cs.nott.ac.uk

9. Persetujuan untuk mengambil bahagian	
a) Saya bersetuju untuk mengambil bahagian dalam penyelidikan dan tandatangan atau tanda saya mengesahkan perkara berikut: • Saya memahami matlamat dan objektif penyelidikan • lakukan oleh penyelidikan • Saya menerima risiko penyertaan • Saya memahami data yang akan dikumpul dan tujuan data tersebut akan digunakan • Saya faham perlindungan akan dilaksanakan untuk melindungi data saya dan hak undang-undang saya • Saya faham saya tidak akan dikenal pasti melainkan penggunaan data yang boleh dikenal pasti telah diminta dan saya bersetuju dengannya • Saya faham bahawa saya boleh menarik diri pada bila-bila masa tanpa penjelasan • Saya telah dapat bertanya soalan tentang penyelidikan, penyertaan saya, dan data saya serta soalan saya telah dijawab dengan memuaskan • Saya bersetuju untuk mengambil bahagian dan penyertaan saya adalah secara sukarela	*Tandatangan atau tanda:*
b) Soal selidik ikut serta. Saya bersetuju untuk melengkapkan soal selidik. Saya faham data yang dikumpul tidak akan mengenal pasti saya.	*Tandatangan atau tanda:*
c) Ikut serta temuduga . Saya bersetuju untuk mengambil bahagian dalam temu bual dengan penyelidik dan rakaman audio temu bual akan dibuat untuk menyokong analisis seterusnya. Saya faham data audio ini tidak akan didedahkan kepada umum atau disiarkan dalam talian tetapi petikan tanpa nama boleh digunakan untuk menyampaikan penyelidikan.	*Tandatangan atau tanda:*
d) Ikut serta kajian etnografi. Saya bersetuju untuk mengambil bahagian dalam kajian etnografi untuk membantu penyelidik memahami aktiviti harian yang terlibat dalam pengendalian perusahaan mikro dan/atau penggunaan pasaran digital . Saya faham dan rakaman fotografi atau audio-video tidak akan didedahkan atau disiarkan dalam talian, tetapi imej tanpa nama yang identiti saya dikaburkan boleh digunakan untuk menyampaikan penyelidikan.	
e) Ikut serta bengkel . Saya bersetuju untuk mengambil bahagian dalam bengkel bersama penyelidik dan rakaman audio-video bengkel akan dibuat untuk menyokong analisis seterusnya. Saya faham data audio dan video ini tidak akan didedahkan kepada umum atau disiarkan dalam talian tetapi petikan tanpa nama boleh digunakan untuk menyampaikan penyelidikan. Saya juga faham bahawa nota yang diberikan oleh peserta juga boleh dikumpul dan digunakan secara tanpa nama dalam penyelidikan.	*Tandatangan atau tanda:*
f) Ikut serta hak cipta. Saya ingin mengesahkan hak saya untuk diiktiraf sebagai pengarang bersama karya asli (data temu bual dan video) yang dibuat dalam penyelidikan ini. **Saya faham ini boleh menjejaskan ketaknamaan saya**	*Tandatangan atau tanda:*
TINGGAL KELUAR. Saya tidak bersetuju untuk menggunakan imej visual saya dalam karya saintifik atau bahan yang mempromosikan penyelidikan dan keputusannya	*Tandatangan atau tanda:*

Nama peserta	
Tarikh	
Saksi *Jika peserta tidak dapat menandatangani*	*Dalam menandatangani saya mengesahkan peserta yang dinamakan di atas telah dimaklumkan sepenuhnya tentang penyelidikan, telah dapat bertanya soalan, dan memberi kebenaran secara bebas.*

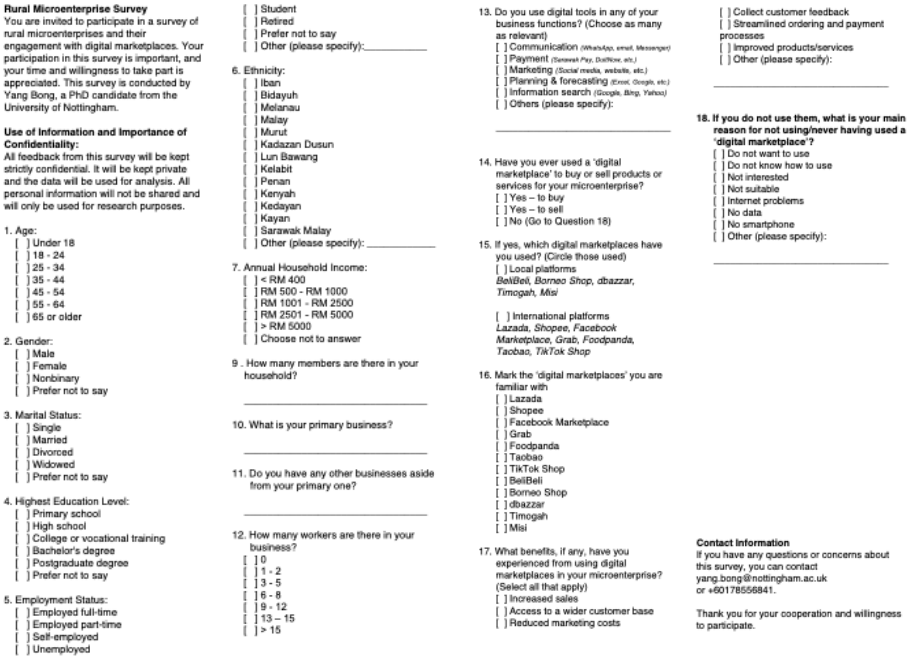
* Alamat pos DPO kami ialah Pegawai Perlindungan Data, Perkhidmatan Undang-undang, Bangunan A5 Trent, Universiti Nottingham, Taman Universiti, Nottingham NG7 2RD.

(v.9 Ogos 2022)

(v.9 Ogos 2022)

A.2 DEMOGRAPHIC SURVEY

A.2.1 *Demographic Survey (English)*



Rural Microenterprise Survey
You are invited to participate in a survey of rural microenterprises and their engagement with digital marketplaces. Your participation in this survey is important, and your time and willingness to take part is appreciated. This survey is conducted by Yang Bong, a PhD candidate from the University of Nottingham.

Use of Information and Importance of Confidentiality:
All feedback from this survey will be kept strictly confidential. It will be kept private and the data will be used for analysis. All personal information will not be shared and will only be used for research purposes.

1. Age:
[ ] Under 18
[ ] 18 - 24
[ ] 25 - 34
[ ] 35 - 44
[ ] 45 - 54
[ ] 55 - 64
[ ] 65 or older

2. Gender:
[ ] Male
[ ] Female
[ ] Nonbinary
[ ] Prefer not to say

3. Marital Status:
[ ] Single
[ ] Married
[ ] Divorced
[ ] Widowed
[ ] Prefer not to say

4. Highest Education Level:
[ ] Primary school
[ ] High school
[ ] College or vocational training
[ ] Bachelor's degree
[ ] Postgraduate degree
[ ] Prefer not to say

5. Employment Status:
[ ] Employed full-time
[ ] Employed part-time
[ ] Self-employed
[ ] Unemployed
[ ] Student
[ ] Retired
[ ] Prefer not to say
[ ] Other (please specify):_____

6. Ethnicity:
[ ] Iban
[ ] Bidayuh
[ ] Melanau
[ ] Malay
[ ] Murut
[ ] Kadazan Dusun
[ ] Lun Bawang
[ ] Kelabit
[ ] Penan
[ ] Kenyah
[ ] Kedayan
[ ] Kayan
[ ] Sarawak Malay
[ ] Other (please specify): _____

7. Annual Household Income:
[ ] < RM 400
[ ] RM 500 - RM 1000
[ ] RM 1001 - RM 2500
[ ] RM 2501 - RM 5000
[ ] > RM 5000
[ ] Choose not to answer

9 . How many members are there in your household?

_____

10. What is your primary business?

_____

11. Do you have any other businesses aside from your primary one?

_____

12. How many workers are there in your business?
[ ] 0
[ ] 1 - 2
[ ] 3 - 5
[ ] 6 - 8
[ ] 9 - 12
[ ] 13 – 15
[ ] > 15

13. Do you use digital tools in any of your business functions? (Choose as many as relevant)
[ ] Communication *(WhatsApp, email, Messenger)*
[ ] Payment *(Sarawak Pay, DuitNow, etc.)*
[ ] Marketing *(Social media, website, etc.)*
[ ] Planning & forecasting *(Excel, Google, etc.)*
[ ] Information search *(Google, Bing, Yahoo)*
[ ] Others (please specify):

_____

14. Have you ever used a 'digital marketplace' to buy or sell products or services for your microenterprise?
[ ] Yes – to buy
[ ] Yes – to sell
[ ] No (Go to Question 18)

15. If yes, which digital marketplaces have you used? (Circle those used)
[ ] Local platforms
BeliBeli, Borneo Shop, dbazzar, Timogah, Misi

[ ] International platforms
Lazada, Shopee, Facebook Marketplace, Grab, Foodpanda, Taobao, TikTok Shop

16. Mark the 'digital marketplaces' you are familiar with
[ ] Lazada
[ ] Shopee
[ ] Facebook Marketplace
[ ] Grab
[ ] Foodpanda
[ ] Taobao
[ ] TikTok Shop
[ ] BeliBeli
[ ] Borneo Shop
[ ] dbazzar
[ ] Timogah
[ ] Misi

17. What benefits, if any, have you experienced from using digital marketplaces in your microenterprise? (Select all that apply)
[ ] Increased sales
[ ] Access to a wider customer base
[ ] Reduced marketing costs
[ ] Collect customer feedback
[ ] Streamlined ordering and payment processes
[ ] Improved products/services
[ ] Other (please specify):

_____

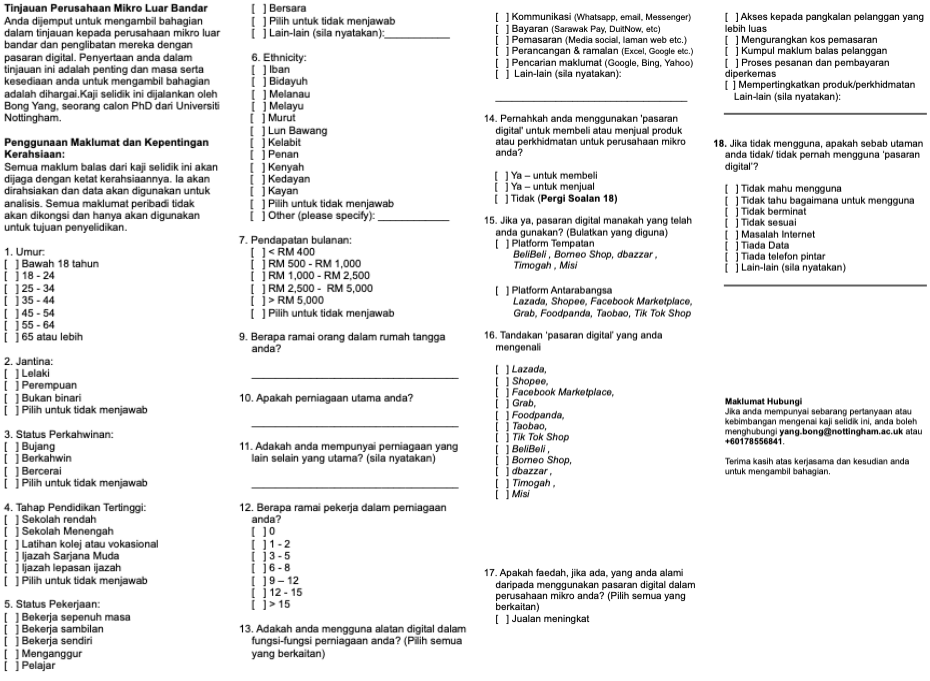
18. If you do not use them, what is your main reason for not using/never having used a 'digital marketplace'?
[ ] Do not want to use
[ ] Do not know how to use
[ ] Not interested
[ ] Not suitable
[ ] Internet problems
[ ] No data
[ ] No smartphone
[ ] Other (please specify):

_____

Contact Information
If you have any questions or concerns about this survey, you can contact yang.bong@nottingham.ac.uk or +60178556841.

Thank you for your cooperation and willingness to participate.

.2.1 *Demographic Survey (Malay)*



Tinjauan Perusahaan Mikro Luar Bandar
Anda dijemput untuk mengambil bahagian dalam tinjauan kepada perusahaan mikro luar bandar dan penglibatan mereka dengan pasaran digital. Penyertaan anda dalam tinjauan ini adalah penting dan masa serta kesediaan anda untuk mengambil bahagian adalah dihargai.Kaji selidik ini dijalankan oleh Bong Yang, seorang calon PhD dari Universiti Nottingham.

Penggunaan Maklumat dan Kepentingan Kerahsiaan:
Semua maklum balas dari kaji selidik ini akan dijaga dengan ketat kerahsiaannya. Ia akan dirahsiakan dan data akan digunakan untuk analisis. Semua maklumat peribadi tidak akan dikongsi dan hanya akan digunakan untuk tujuan penyelidikan.

1. Umur:
[ ] Bawah 18 tahun
[ ] 18 - 24
[ ] 25 - 34
[ ] 35 - 44
[ ] 45 - 54
[ ] 55 - 64
[ ] 65 atau lebih

2. Jantina:
[ ] Lelaki
[ ] Perempuan
[ ] Bukan binari
[ ] Pilih untuk tidak menjawab

3. Status Perkahwinan:
[ ] Bujang
[ ] Berkahwin
[ ] Bercerai
[ ] Pilih untuk tidak menjawab

4. Tahap Pendidikan Tertinggi:
[ ] Sekolah rendah
[ ] Sekolah Menengah
[ ] Latihan kolej atau vokasional
[ ] Ijazah Sarjana Muda
[ ] Ijazah lepasan ijazah
[ ] Pilih untuk tidak menjawab

5. Status Pekerjaan:
[ ] Bekerja sepenuh masa
[ ] Bekerja sambilan
[ ] Bekerja sendiri
[ ] Menganggur
[ ] Pelajar
[ ] Bersara
[ ] Pilih untuk tidak menjawab
[ ] Lain-lain (sila nyatakan):_____

6. Ethnicity:
[ ] Iban
[ ] Bidayuh
[ ] Melanau
[ ] Melayu
[ ] Murut
[ ] Lun Bawang
[ ] Kelabit
[ ] Penan
[ ] Kenyah
[ ] Kedayan
[ ] Kayan
[ ] Pilih untuk tidak menjawab
[ ] Other (please specify): _____

7. Pendapatan bulanan:
[ ] < RM 400
[ ] RM 500 - RM 1,000
[ ] RM 1,000 - RM 2,500
[ ] RM 2,500 - RM 5,000
[ ] > RM 5,000
[ ] Pilih untuk tidak menjawab

9. Berapa ramai orang dalam rumah tangga anda?

_____

10. Apakah perniagaan utama anda?

_____

11. Adakah anda mempunyai perniagaan yang lain selain yang utama? (sila nyatakan)

_____

12. Berapa ramai pekerja dalam perniagaan anda?
[ ] 0
[ ] 1 - 2
[ ] 3 - 5
[ ] 6 - 8
[ ] 9 – 12
[ ] 12 - 15
[ ] > 15

13. Adakah anda mengguna alatan digital dalam fungsi-fungsi perniagaan anda? (Pilih semua yang berkaitan)
[ ] Kommunikasi (Whatsapp, email, Messenger)
[ ] Bayaran (Sarawak Pay, DuitNow, etc)
[ ] Pemasaran (Media social, laman web etc.)
[ ] Perancangan & ramalan (Excel, Google etc.)
[ ] Pencarian maklumat (Google, Bing, Yahoo)
[ ] Lain-lain (sila nyatakan):

_____

14. Pernahkah anda menggunakan 'pasaran digital' untuk membeli atau menjual produk atau perkhidmatan untuk perusahaan mikro anda?

[ ] Ya – untuk membeli
[ ] Ya – untuk menjual
[ ] Tidak (**Pergi Soalan 18**)

15. Jika ya, pasaran digital manakah yang telah anda gunakan? (Bulatkan yang diguna)
[ ] Platform Tempatan
BeliBeli , Borneo Shop, dbazzar , Timogah , Misi

[ ] Platform Antarabangsa
Lazada, Shopee, Facebook Marketplace, Grab, Foodpanda, Taobao, Tik Tok Shop

16. Tandakan 'pasaran digital' yang anda mengenali

[ ] *Lazada,*
[ ] *Shopee,*
[ ] *Facebook Marketplace,*
[ ] *Grab,*
[ ] *Foodpanda,*
[ ] *Taobao,*
[ ] *Tik Tok Shop*
[ ] *BeliBeli ,*
[ ] *Borneo Shop,*
[ ] *dbazzar ,*
[ ] *Timogah ,*
[ ] *Misi*

17. Apakah faedah, jika ada, yang anda alami daripada menggunakan pasaran digital dalam perusahaan mikro anda? (Pilih semua yang berkaitan)
[ ] Jualan meningkat
[ ] Akses kepada pangkalan pelanggan yang lebih luas
[ ] Mengurangkan kos pemasaran
[ ] Kumpul maklum balas pelanggan
[ ] Proses pesanan dan pembayaran diperkemas
[ ] Mempertingkatkan produk/perkhidmatan Lain-lain (sila nyatakan):

_____

18. Jika tidak mengguna, apakah sebab utama anda tidak/ tidak pernah mengguna 'pasaran digital'?

[ ] Tidak mahu mengguna
[ ] Tidak tahu bagaimana untuk mengguna
[ ] Tidak berminat
[ ] Tidak sesuai
[ ] Masalah Internet
[ ] Tiada Data
[ ] Tiada telefon pintar
[ ] Lain-lain (sila nyatakan)

_____

Maklumat Hubungi
Jika anda mempunyai sebarang pertanyaan atau kebimbangan mengenai kaji selidik ini, anda boleh menghubungi **yang.bong@nottingham.ac.uk** atau **+60178556841.**

Terima kasih atas kerjasama dan kesudian anda untuk mengambil bahagian.

A.3 SEMI-STRUCTURED INTERVIEW QUESTIONS

1. Introduction
   - Could you briefly describe what your business is. How long have you been operating this business? Why did you get into this business?

2. Contextual Understanding
   - Can you describe a typical day or week in your microenterprise? What are the key activities you engage in? (exp. sourcing products, packaging, selling)
   - Can you describe your products, target market?
   - How do you currently manage your business operations? (ie. keep track of inventory, expenses, and profits)
   - What are the challenges you face in terms of transportation, communication, and accessing customers/ markets?

3. Supply Chain & Operations
   - Can you walk me through the process of sourcing products from suppliers to selling them at the local market?
   - Do you use any digital platforms or tools to find suppliers or compare prices?
   - How do you gather information about market trends, pricing, and customer preferences? Do you use any online platforms for this purpose?

4. Pricing and Marketing
   - How do you seek new customers? Are there digital channels you rely on, such as social media or messaging apps?
   - How do you decide on pricing for your products? (ie. gather any information online about market trends)

5. Packaging and Transport
   - How do you handle packaging and transportation of products?
   - Are there any pain points or areas for improvement in this process?

6. Market Interactions
   - What interactions do you have with customers at the local market?
   - How do you communicate with them, what are some feedback you have received and how do you manage them?

7. Technology Use:

- Are there any digital technologies or tools you currently use in your business? How do you use them, when do you use them, for what purpose?

- How comfortable are you with using digital devices or applications? Are there any specific challenges you face when using them? (ie. How do you currently manage communication?)

8. Technology Integration:
   - What barriers or concerns do you have about using digital platforms to sell your products online?
   - Are there any specific tasks where you feel digital technology could help streamline your operations?
   - What kind of information would you find valuable if it were accessible through a digital platform? (ie. knowing market prices in different locations)

9. Digital Marketplace:
   - What comes to mind when you think of digital marketplace? What would you like for it to do for you?
   - How do you think participating in a digital marketplace might affect your local community, both positively and negatively?
   - How do you currently handle payment transactions, and what concerns do you have about online payment systems?
   - What challenges might you encounter in terms of accessing the necessary technology infrastructure (e.g., internet connectivity) for online business?

10. Governmental Initiatives
    - Are you aware of some of the initiatives for e-commerce? What are your thoughts about them? (ie. welcome, they don't understand, we try etc.)
    - What are your long-term goals for your microenterprise, and do you see digital technology playing a role in achieving those goals?

11. Trust and Relationships:
    - How do you establish trust with your suppliers and customers? What factors contribute to building and maintaining these relationships?

B

DATA SET OF FIELDWORK STUDIES

This appendix includes an example of a dataset obtained from the fieldwork and a portion of an interview transcript. The appendix also contains the link to the repository of voice files obtained from the workshops.

- Appendix B.1 provides an example of a dataset of the ethnographic study.
- Appendix B.2 provides an example of an elite interview transcript.
- Appendix B.3 provides the Scottish Rural Classification that this study refers to in classifying the type of rurality of the field sites.

B.1 – Sample of case write-ups for each micro-entrepreneur/enterprise

Each micro-entrepreneur or micro-enterprise of the study has a dedicated case write-up that includes information about access, length of engagement, observations, vignettes of conversations, fieldnotes, photos, digital sites, etc.

Along with audio and video data, these case write-ups serve as data sources for further analysis.



Case Study: Michael (pseudonym)– Market Seller and Homestay Operator

Location: Bawang Assan, Sibu

Period of engagement: July 23 – January 24 (6 months)

Access: First contact was through a visit to the adjacent long house with the PDC24 committee, which was in Sibu for site audits in preparation for the conference. UTS, the university attached to my placement, has had long-standing research and community engagement with the community in Bawang Assan, particularly with Michael's household. We arrive at Bawang Assan around 1 pm that day to visit another local entrepreneur, arranged by a tour company that was a vendor for the PDC conference.

During that day, we had to use the internet for an online meeting for matters relating to PDC. Due to Michael's previous engagement with UTS researcher Gary, who researches rural connectivity, there was existing internet infrastructure in their house. We were hence told to join the online meeting using the internet available at Michael's house, with approval from Michael obtained through Gary.

Through the established relationship between UTS's researchers and the local community, I have managed to gain access to the BA community and built rapport fairly quickly. The goodwill of previous researchers, who made the introductions, has facilitated local trust as compared to if I were to build relationships on my own.

Introduction of Michael's enterprise

Michael is a rural produce seller at the weekend market in Sibu, selling a range of products, including village produce and crafts. He also operates a homestay, a type of accommodation where visitors stay with the host family to experience life in their setting. At the same time, Michael is also the assigned village postman, where he works 2-3 days a week in transporting letters and deliveries between Bawang Assan and the post office. Due to his network, government visits for outreach and training would also be hosted by the family, which brings in additional income. Michael has introduced me to the other microentrepreneurs in the village for the purpose of my fieldwork research.

Activities of Engagement

1. Observation of purchasing and acquisition of goods and products
2. Observation of selling of items at the weekend market
3. Semi-structured interview
4. Observation of event hosting for longhouse visitors
5. Workshop activities hosted at the residence



Observation:

1. Work of Rural Microenterprise

1.1 **Multiplicity of work**

Michael works formally as a village postman, operates a homestay and sells items at the weekend market. The work changes through the week, with room for spontaneity and improvisation.

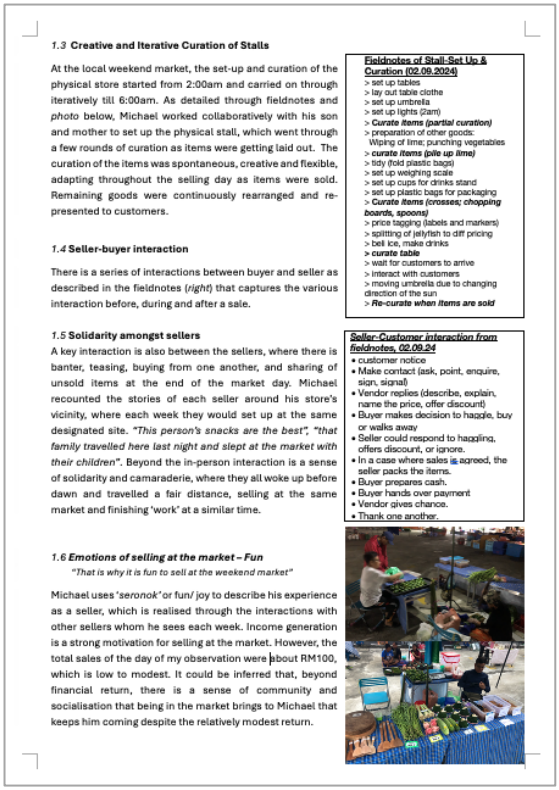
"Fieldnotes: We arrive back at the long house from a full day of obtaining market supplies. Immediately, Michael and the family had to switch hats from being a market seller to a homestay operator. After loading the goods off the car, he proceeded to prepare lunch for me (as their homestay guest), and the family."

1.2 **Fluidity, spontaneity of work and seasonality of products**

Products sold ranges from seasonal fruits, vegetables, cutleries, and seafood. He has been testing different products to sell, including 'jellyfish', which he brokered a contract for recently during my time with them, and of which I had the opportunity to follow and observe.

"Regarding the vegetables that we sell, they are mainly village vegetables, such as ubi, upah and a variety of fruits. We also make chopping boards. My brother, who works at a wood factory, makes wooden spoons for rice scooping...We are also at the moment testing out jellyfish, to see how the response is at the Tamu Indah weekend market." 1st September 2023

On the way back from purchasing jellyfish supplies, we stopped by the roadside as Michael saw an abundance of sweet potato plants. The leaves of the plants could be foraged and mashed into a product sellable at the local market (*photo*). We spent 30 minutes picking the leaves from the roadside (*photo*).



1.3 **Creative and Iterative Curation of Stalls**

At the local weekend market, the set-up and curation of the physical store started from 2:00am and carried on through iteratively till 6:00am. As detailed through fieldnotes and *photo* below, Michael worked collaboratively with his son and mother to set up the physical stall, which went through a few rounds of curation as items were getting laid out. The curation of the items was spontaneous, creative and flexible, adapting throughout the selling day as items were sold. Remaining goods were continuously rearranged and re-presented to customers.

Fieldnotes of Stall-Set Up & Curation (02.09.2024)
> set up tables
> lay out table clothe
> set up umbrella
> set up lights (2am)
> ***Curate items (partial curation)***
> preparation of other goods: Wiping of lime; punching vegetables
> ***curate items (pile up lime)***
> tidy (fold plastic bags)
> set up weighing scale
> set up cups for drinks stand
> set up plastic bags for packaging
> ***Curate items (crosses; chopping boards, spoons)***
> price tagging (labels and markers)
> splitting of jellyfish to diff pricing
> bell ice, make drinks
> ***curate table***
> wait for customers to arrive
> interact with customers
> moving umbrella due to changing direction of the sun
> ***Re-curate when items are sold***

1.4 **Seller-buyer interaction**

There is a series of interactions between buyer and seller as described in the fieldnotes (*right*) that captures the various interaction before, during and after a sale.

Seller-Customer interaction from fieldnotes, 02.09.24
- customer notice
- Make contact (ask, point, enquire, sign, signal)
- Vendor replies (describe, explain, name the price, offer discount)
- Buyer makes decision to haggle, buy or walks away
- Seller could respond to haggling, offers discount, or ignore.
- In a case where sales is agreed, the seller packs the items.
- Buyer prepares cash.
- Buyer hands over payment
- Vendor gives chance.
- Thank one another.

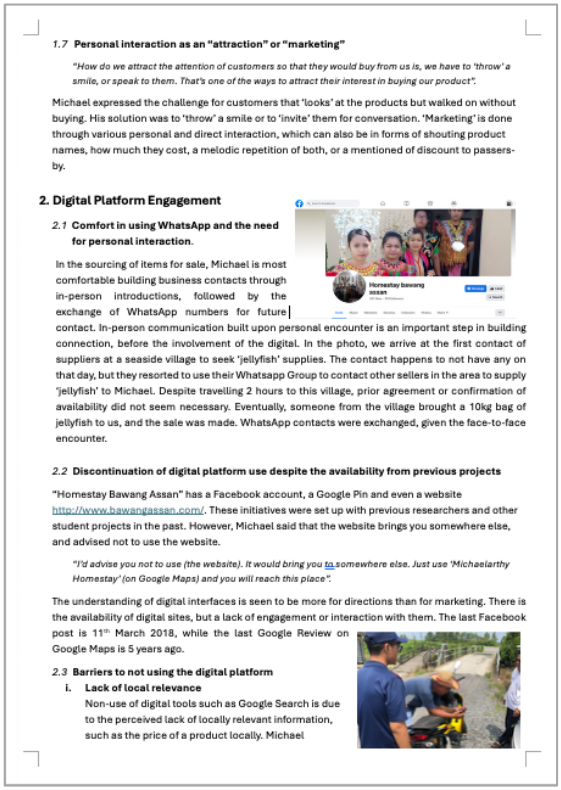
1.5 **Solidarity amongst sellers**

A key interaction is also between the sellers, where there is banter, teasing, buying from one another, and sharing of unsold items at the end of the market day. Michael recounted the stories of each seller around his store's vicinity, where each week they would set up at the same designated site. *"This person's snacks are the best", "that family travelled here last night and slept at the market with their children"*. Beyond the in-person interaction is a sense of solidarity and camaraderie, where they all woke up before dawn and travelled a fair distance, selling at the same market and finishing 'work' at a similar time.

1.6 ***Emotions of selling at the market – Fun***

"That is why it is fun to sell at the weekend market"

Michael uses '*seronok*' or fun/ joy to describe his experience as a seller, which is realised through the interactions with other sellers whom he sees each week. Income generation is a strong motivation for selling at the market. However, the total sales of the day of my observation were about RM100, which is low to modest. It could be inferred that, beyond financial return, there is a sense of community and socialisation that being in the market brings to Michael that keeps him coming despite the relatively modest return.



1.7 **Personal interaction as an "attraction" or "marketing"**

"How do we attract the attention of customers so that they would buy from us is, we have to 'throw' a smile, or speak to them. That's one of the ways to attract their interest in buying our product".

Michael expressed the challenge for customers that 'looks' at the products but walked on without buying. His solution was to 'throw' a smile or to 'invite' them for conversation. 'Marketing' is done through various personal and direct interaction, which can also be in forms of shouting product names, how much they cost, a melodic repetition of both, or a mentioned of discount to passers-by.

2. Digital Platform Engagement

2.1 **Comfort in using WhatsApp and the need for personal interaction.**

In the sourcing of items for sale, Michael is most comfortable building business contacts through in-person introductions, followed by the exchange of WhatsApp numbers for future contact. In-person communication built upon personal encounter is an important step in building connection, before the involvement of the digital. In the photo, we arrive at the first contact of suppliers at a seaside village to seek 'jellyfish' supplies. The contact happens to not have any on that day, but they resorted to use their Whatsapp Group to contact other sellers in the area to supply 'jellyfish' to Michael. Despite travelling 2 hours to this village, prior agreement or confirmation of availability did not seem necessary. Eventually, someone from the village brought a 10kg bag of jellyfish to us, and the sale was made. WhatsApp contacts were exchanged, given the face-to-face encounter.

2.2 **Discontinuation of digital platform use despite the availability from previous projects**

"Homestay Bawang Assan" has a Facebook account, a Google Pin and even a website http://www.bawangassan.com/. These initiatives were set up with previous researchers and other student projects in the past. However, Michael said that the website brings you somewhere else, and advised not to use the website.

"I'd advise you not to use (the website). It would bring you to somewhere else. Just use 'Michaelarthy Homestay' (on Google Maps) and you will reach this place".

The understanding of digital interfaces is seen to be more for directions than for marketing. There is the availability of digital sites, but a lack of engagement or interaction with them. The last Facebook post is 11th March 2018, while the last Google Review on Google Maps is 5 years ago.

2.3 **Barriers to not using the digital platform**

i. **Lack of local relevance**
Non-use of digital tools such as Google Search is due to the perceived lack of locally relevant information, such as the price of a product locally. Michael

B.2 – Example of elite interview transcript

[Interview]-20231031_160614-Meeting Recording

October 31, 2023, 8:06 AM 56m 37s

Yang Bong started transcription

Yang Bong 0:04
OK, so good afternoon again.
Thank you again for your time.
So we have 10 questions.

Interviewee (Guest) 0:13
And that's OK.

Yang Bong 0:14
So the first one is just for research purposes. Could you briefly introduce [redacted for anonymity]?
What is this initiative about, and who is the target audience? Who are the main funders of this initiative?

Interviewee (Guest) 0:32
Umm, OK,
I'm from the Business Advisory Services department of [redacted].

So we are a department under [redacted], where we fund technology-based companies.
So we have many companies within an ecosystem.
So these are either fund recipients or tenants because we have five technology centres and we also have companies or individuals, slash innovators, slash researchers and our programs like the one and Mr [redacted] is in, which is the [redacted] Technology Accelerator.
And so we have all these different individuals and entrepreneurs. Under [redacted], we have these services that we provide to our ecosystem companies, where we help them with business advisory services. To be specific, we help them in terms of growing the business.
So either through, you know, coaching or mentoring, or perhaps they need financial advisory services or fundraising activities or market expansion. So that is the scope we're looking at. So we do have another department which you mentioned just now, which is technology advisory services. So they look more on the technology part.

Yang Bong 2:14
OK.
And in terms of providing funding or matching them with funding, Does your department do that as well?

Interviewee (Guest) 2:24
And that's not our department, but that's what the company does.

Our company, we give funding to companies, technology-based companies, so it can be a form of a grant or a combination of grant and also funding.

Yang Bong 2:43
Umm, so that's under the wider company and your specific department does that advisory.

Interviewee (Guest) 2:47
Yes, correct.

Yang Bong 2:51
OK. That's clear. So then we move on to the next question.Then, who is the target audience for? Maybe we can talk about [redacted] and then maybe your department with your target audience.

Interviewee (Guest) 3:06
OK. Target audience is same because for [redacted] like I mentioned to you earlier, we focus on technology-based companies.
So they can be companies in any sector actually: in the biotech sector, in the semiconductor sector, in the food sector.

So we have a wide range of companies in our ecosystem that I mentioned earlier.
So we have like for example companies that produce chips for iPhones.
We also have companies that produce IOLs. IOL lenses for the eyes.
You know when they replace the lens, so you also have companies like that we have medical device companies, we have food companies, we have all sorts of companies.
So our target markets are technology-based companies.

No matter what size, so they are companies that come to us that are startups, for example like [redacted], Were you in the meeting with Dr.[redacted] and Mr [redacted] the other day with [redacted]?

Yang Bong 4:21
Yeah, yeah.

Interviewee (Guest) 4:23
So [redacted] is one of our fund recipients, so they're into blockchain and they are our sandbox fund recipient.

[end of sample transcript]

B.3- The Scottish Government Urban Rural Classification 2022

Scottish Government Urban Rural Classification 8-fold

Class	Class Name	Description
1	**Large Urban Areas**	Settlements of 125,000 people and over.
2	**Other Urban Areas**	Settlements of 10,000 to 124,999 people.
3	**Accessible Small Towns**	Settlements of 3,000 to 9,999 people, and within a 30 minute drive time of a Settlement of 10,000 or more.
4	**Remote Small Towns**	Settlements of 3,000 to 9,999 people, and with a drive time of over 30 minutes but less than or equal to 60 minutes to a Settlement of 10,000 or more.
5	**Very Remote Small Towns**	Settlements of 3,000 to 9,999 people, and with a drive time of over 60 minutes to a Settlement of 10,000 or more.
6	**Accessible Rural**	Areas with a population of less than 3,000 people, and within a drive time of 30 minutes to a Settlement of 10,000 or more.
7	**Remote Rural**	Areas with a population of less than 3,000 people, and with a drive time of over 30 minutes but less than or equal to 60 minutes to a Settlement of 10,000 or more.
8	**Very Remote Rural**	Areas with a population of less than 3,000 people, and with a drive time of over 60 minutes to a Settlement of 10,000 or more.

C

ADDITIONAL DOCUMENTS ON DESIGN WORKSHOP STUDIES

Included in this appendix are additional documentation relating to design workshop studies:

- Appendix C.1 are samples of workshop invitation, in the form of posters which are easily disseminable through social media and Whatsapp.
- Appendix C.2 provides the schedule of the four participatory design workshops.
- Appendix C.3 provides an example of the sequence of frames for a design workshop.
- Appendix C.4 provides an example of a transcript of the conversation captured during the participatory design workshops.
- Appendix C.5 provides prompts provided in the workshops.
- Appendix C.6 provides the personas designed for the workshops.
- Appendix C.7 provides a link to the voice files from the fieldwork.

C.1 WORKSHOP INVITATION POSTER



C.2 SCHEDULE OF PARTICIPATORY DESIGN WORKSHOPS

RURAL ENTREPRENEUR DIGITAL WORKSHOP 2024
BAWANG ASSAN, SIBU

TIME	SESSION
9:30am - 9:50am	Introductory session
9:50am – 10:30am	**SESSION 1: UNDERSTANDING** Reflections on Digital Experiences and Challenges
10:30am - 11:10am	**SESSION 2: COURSE** Digital Skills of Rural Entrepreneurs
11:10am – 11:25am	*Take a break*
11:25am – 12:30pm	**SESSION 3: WORKSHOP**
12:30pm – 1:00pm	*Lunch*
1:00pm – 2:00pm	**SESSION 3: WORKSHOP** Desa 'Digital Store' design
2:00pm – 2:30pm	**Timogah** Introduction (Digital Market)
2:30pm – 3:00pm	Appreciation
3:00pm – 4:00pm	**PRACTICAL SUPPORT***



C. 3 LIST OF PARTICIPATORY DESIGN WORKSHOP PARTICIPANTS

Workshop 1 – Bengoh

P	G	Age	Education	Type of Micro-enterprise
01	F	55-64	Secondary	Coffee seller
02	F	45-54	Diploma	Campsite and Recreation
03	F	35-44	Secondary	Surprise Service
04	M	45-54	Diploma	Campsite and Printing
05	M	35-44	Secondary	Bakery
06	M	25-34	Undergraduate	Customised Gifts
07	F	45-54	Undergraduate	Spa and Therapeutic Massage
08	F	25-34	Secondary	Restaurant
09	F	55-64	Primary	Food Stalls
10	F	35-44	Undergraduate	Digital Economy Centre
11	M	25-34	Secondary	Handyman
12	M	25-34	Undergraduate	Computer repairing
13	M	55-64	Primary	Campsite
14	M	45-54	Secondary	Homestay and Chalet
15	M	35-44	Diploma	Homestay
16	M	35-44	Secondary	N/A
17	M	35-44	Undergraduate	Government Officer

Notes: P = Participant; G = Gender; M = Male; F = Female

Workshop 2 – Bawang Assan

P	G	Age	Education	Type of Micro-enterprise
01	F	25-34	Secondary	Cultural Visits
02	F	25-34	Secondary	Aspiring micro-entrepreneur
03	F	55-64	Secondary	Market seller
04	F	45-54	Secondary	Farmer
05	F	35-44	Secondary	Aspiring micro-entrepreneur
06	F	45-54	Secondary	Aspiring micro-entrepreneur
07	F	25-34	Secondary	Aspiring micro-entrepreneur
08	F	35-44	Secondary	Aspiring micro-entrepreneur
09	F	45-54	Secondary	Farmer
10	F	25-34	Secondary	Aspiring micro-entrepreneur
11	M	25-34	Secondary	Aspiring micro-entrepreneur
12	F	35-44	Secondary	Food and Beverages
13	F	25-34	Undergraduate	E-commerce
14	M	55-64	Secondary	Ride-hailing
15	M	45-54	Secondary	Farmer
16	M	45-54	Secondary	Farmer
17	M	45-54	Secondary	Farmer and Fisherman
18	M	35-44	Undergraduate	Dropship
19	M	35-44	Undergraduate	E-commerce

Notes: P = Participant; G = Gender; M = Male; F = Female

Workshop 3 – Long Semadoh

P	G	Age	Education	Type of Micro-enterprise
01	F	45-54	Secondary	Local snacks
02	F	65>	Secondary	Rice farmer & homestay
03	F	25-34	Secondary	Restaurant & Food Beverage
04	M	65>	Primary	Rice farmer & homestay
05	M	45-54	Secondary	Homestay and ecotourism
06	M	25-34	Diploma	Restaurant & ecotourism

Notes: P = Participant; G = Gender; M = Male; F = Female

Workshop 4 - Sibu

P	G	Position	Field	Affiliated Country
01	F	Researcher	Interaction Design	Sweden & China
02	F	Assistant Professor	Industrial Design	India
03	M	Associate Professor	Community-Based Co-Design	Namibia
04	M	Community Leader	Community Based Co-Design	Namibia
05	F	Senior Lecturer	ICT and e-Business	Malaysia
06	M	Assistant Professor	Design Engineering	Japan
07	M	Researcher	Community-Based Co-Design	Denmark & Namibia
08	M	Senior Lecturer	Software Engineering	Malaysia
09	F	Artist	Digital Humanities	UK & Malaysia
10	M	Doctoral Researcher	Design Thinking	India & Australia

11	M	Managing Director	Design and Research (Consultancy)	Japan
12	F	Doctoral Researcher	Participatory Design	Finland & Japan
13	M	Digital Platform Director	Digital Marketplace	Malaysia
14	F	Digital Platform Designer	Digital Marketplace	Malaysia
15	M	Micro-entrepreneur	Micro-entrepreneurship	Malaysia
16	F	Micro-entrepreneur	Micro-entrepreneurship	Malaysia
17	F	Micro-entrepreneur	Micro-entrepreneurship	Malaysia
18	M	Micro-entrepreneur	Micro-entrepreneurship	Malaysia
19	F	Micro-entrepreneur	Micro-entrepreneurship	Malaysia

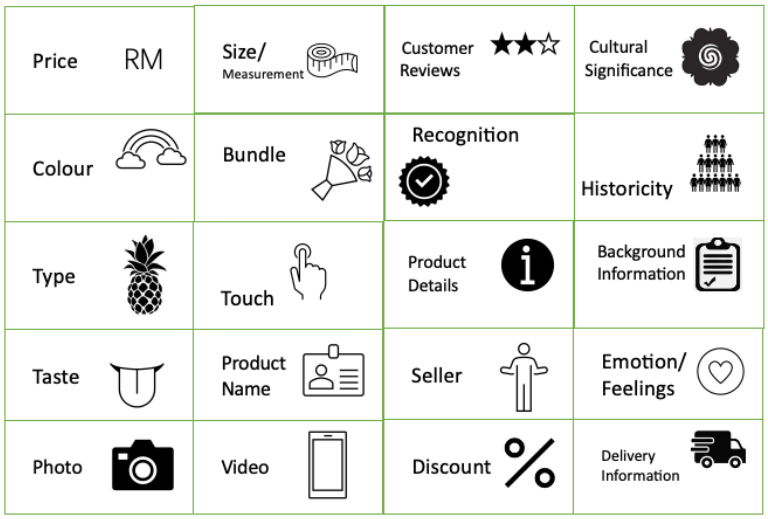
Notes: P = Participant; G = Gender; M = Male; F = Female

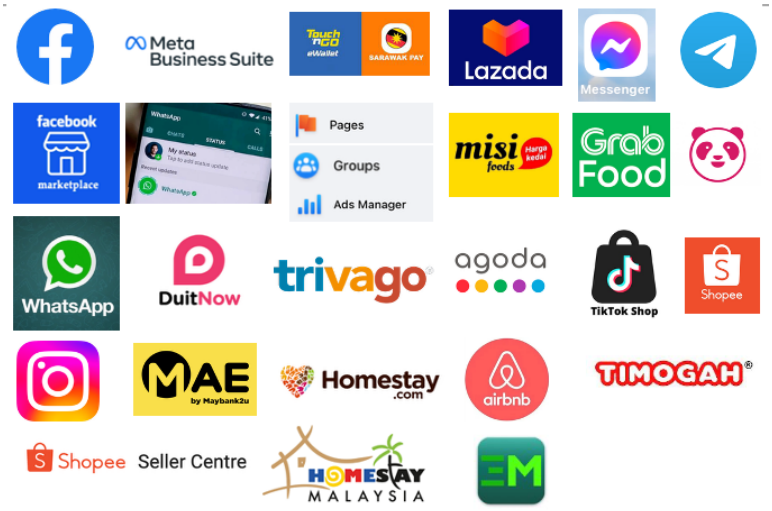
C.4 WORKSHOP STRUCTURE

A typical workshop structure, which incorporates digital skills training with participatory design workshop

MASA/ TIME	**SESI/ SESSION**
9:30am - 10:00am	Sesi Pengenalan/ Get-to-know-you Session
10:00am – 10:30am	**SESI 1: PERKONGSIAN/ SESSION 1: SHARING** Refleksi Pengalaman dan Cabaran Digital/ Reflection on Experience and Challenges With Digitalisation
10:00am - 11:00 am	**SESI 2: KURSUS I/ SESSION 2: COURSE II** Kemahiran Digital Usahawan Desa/ Digital Skills for Rural Entrepreneurs
11:00am -11:10am	*Rehat/* Rest
11:10am - 11:40am	**SESI 2: KURSUS II / SESSION 3: COURSE III** Kemahiran Digital Usahawan Desa/ Digital Skills for Rural Entrepreneurs
11:40am - 11:50am	*Rehat/ Break*
11:50am - 12:30pm	**SESI 3: ACTIVITI KUMPULAN 1 /GROUP ACTIVITY 1** Platform Digital - Pemahaman dan Praktikal/ Digital Platform – Understanding and Practical
12:30pm – 1:00pm	Makan Tengahari/ Lunch
1:00pm – 2:00pm	**SESI 4: ACTIVITI KUMPULAN 2/ GROUP ACTIVITY 2** Pasaran Digital dan Persona/ Digital Marketplace and Personas
2:00 – 2:30pm	Refleksi dan Penghargaan/ Reflection and Appreciation
2:30pm – 3:00pm	**Homestay Agency Presentation (Federal Agency)**

C.4 WORKSHOP PROMPTS

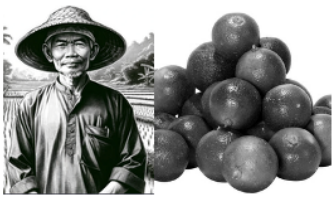




Prompt categories	**Prompt cards**
Core Transaction & Logistics (Malekpour et al., 20222)	Price • Discount • Bundle • Seller • Delivery Information
Intrinsic & Descriptive Attributes (Malekpour et al., 20222)	Size / Measurement • Colour • Type • Product Name • Product Details
Multi-Sensory / Embodied Experience (Krishna, 2012, Petit et al., 2019)	Photo • Video • Touch • Taste
Trust & Social Proof (Amblee & Bui, 2011)	Customer Reviews • Recognition
Socio-cultural Narrative & Provenance (Marsh, 2023)	Cultural Significance • Historicity • Background Information
Affective & Relational Layer (From fieldwork data)	Emotion / Feelings

C.4 SAMPLES OF PERSONAS USED IN WORKSHOP

John, 48, Farmer



Introduction:
John has a lemon farm that he cultivated for 3 years. He supplied his lemons to Chang, a buyer at 'Sibu Market' all this time at a satisfactory price.

Given that his lemon trees will be more productive in the coming year, John hopes to profit from the excess yield.

He had heard about digital platforms such as 'Facebook Marketplace' and 'Timogah' that might help him find buyers for musk limes other than Chang, but he didn't know how to start.

Discussion: (10m)
1. What are John's needs and challenges?

SCENARIO: Create a story about Uncle Musa when he tries to use a digital accommodation platform (e.g., Airbnb, Booking.com, Homestay.com, etc.).

Share:
What scenario have you designed?

Diana, 55
Iban handicraft products



Introduction:
Diana is a grandmother who is good at making traditional Iban handicrafts. He learned handicrafts from the women in his village and is now skilled.

Through the introduction of friends and family, Diana sells her handicrafts to those who are interested through her personal connections. However, Diana wants to sell her traditional handicrafts to a wider range of customers, such as Sibu, Kuching and Miri. But Diana lacks knowledge in the digital field and she is not sure how to start.

Discussion:
1. What are Diana's needs and challenges?
2. If Diana wanted to get more bookings, what would she advise?

SCENARIO: Create a story about Diana when she chooses to try using a digital platform (e.g., Facebook Marketplace, Timogah, Shopee, etc.).

Share:
What scenario have you designed?

Uncle Musa, 53
Long House Homestay



Introduction:
Uncle Musa has been running a homestay in the countryside of Sibu for the past 6 years. Through the help of his friend, he has built a website for his homestay and also has a Facebook page and Google Maps where there is information, pictures and promotional videos of his homestay.

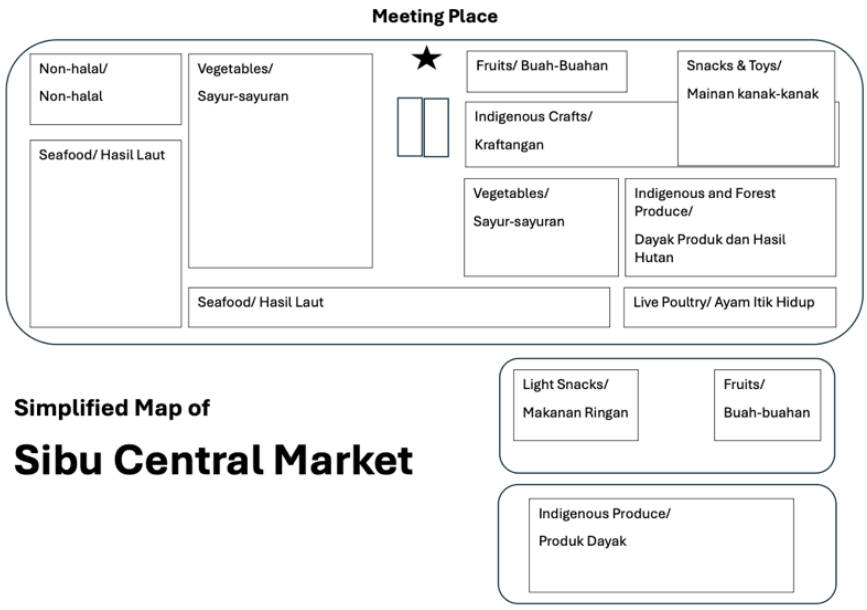
However, because Uncle Musa is not skilled in digital management, the online sites are less active and homestay bookings are also slowing down.

Discussion:
1. What are Uncle Jim's needs and challenges?
2. If Uncle Musa wants to get more bookings for his homestay, what advice will your group give?

SCENARIO: Create a story about Uncle Musa when he tries to use a digital accommodation platform (e.g., Airbnb, Booking.com, Homestay.com, etc.).

Share:
What scenario have you designed?

C.5 MAP OF THE MARKET FOR WORKSHOP FOUR



To support participants in familiarisation of the local market, a simplified map of the Sibu Central Market was drawn and distributed.

D

ADDITIONAL DOCUMENTS ON DESK STUDY

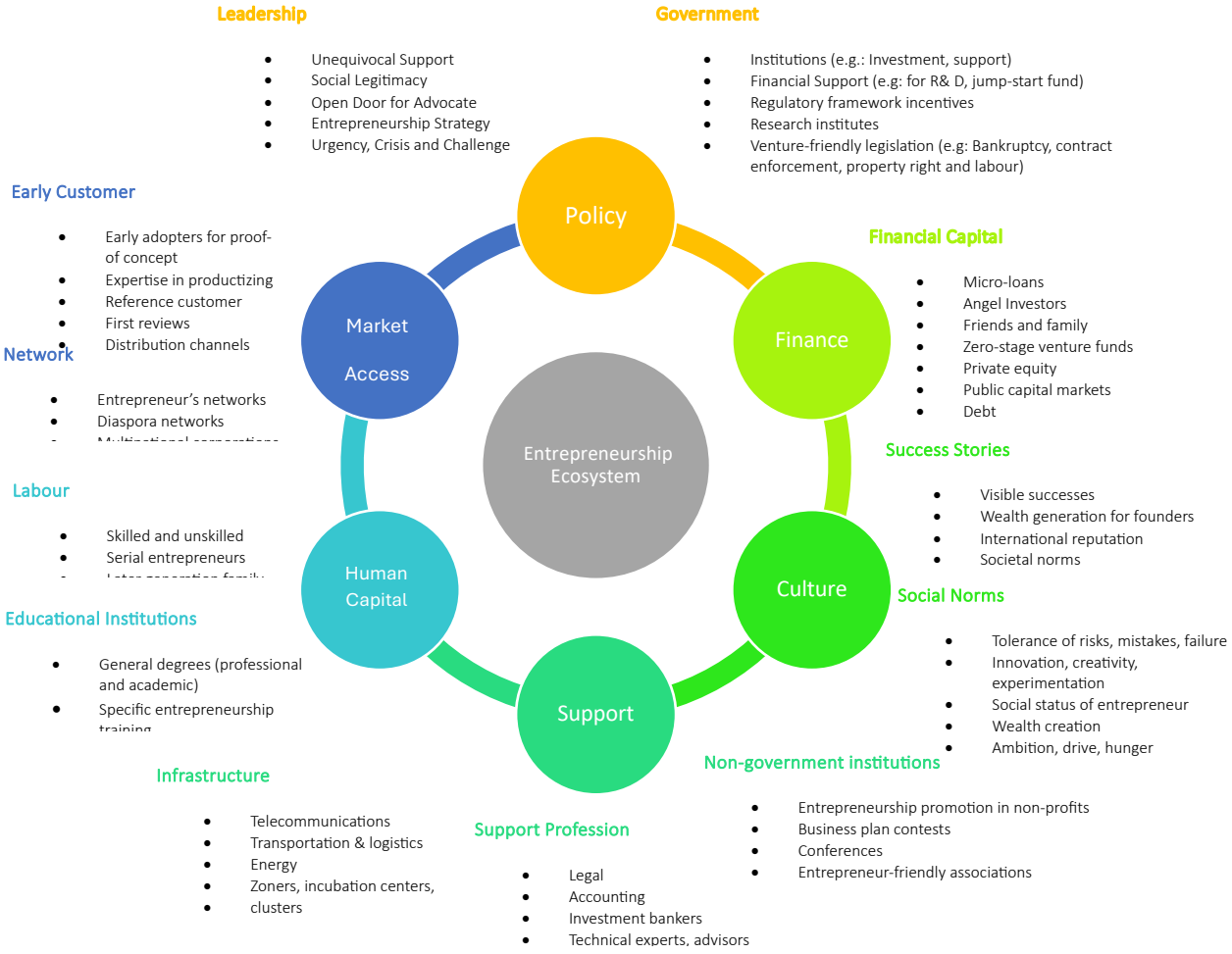
Included in this appendix are additional documentation relating to the preliminary desk study conducted in mapping the digital entrepreneurship initiatives available in Sarawak.

The desk study was conducted as part of the fellowship at the University of Technology Sarawak from July 2023 to September 2023. A local research team at the university along with a research institute – Sarawak Development Institute assisted in the data collection, primarily in assessing key stakeholders from various state and federal government agencies.

- Appendix D.1 provides the framework of entrepreneurship ecosystem proposed by Isenberg (2016), which the study adapted from to the DEI ecosystem framework.
- Appendix D.2 provides the visualisation of the 50 DEIs mapped based on their funders.
- Appendix D.3 provides the DEIs classified by domains.
- Appendix D.4 provides the glossary for the acronyms used in the desk study.

Outputs of this study has been disseminated to the key stakeholders through the Sarawak Development Institute, while also written into a journal article currently under second revision by *The International Journal of Entrepreneurship and Innovation*.

D.1 - Isenberg's Entrepreneurship Ecosystem Framework (2016)

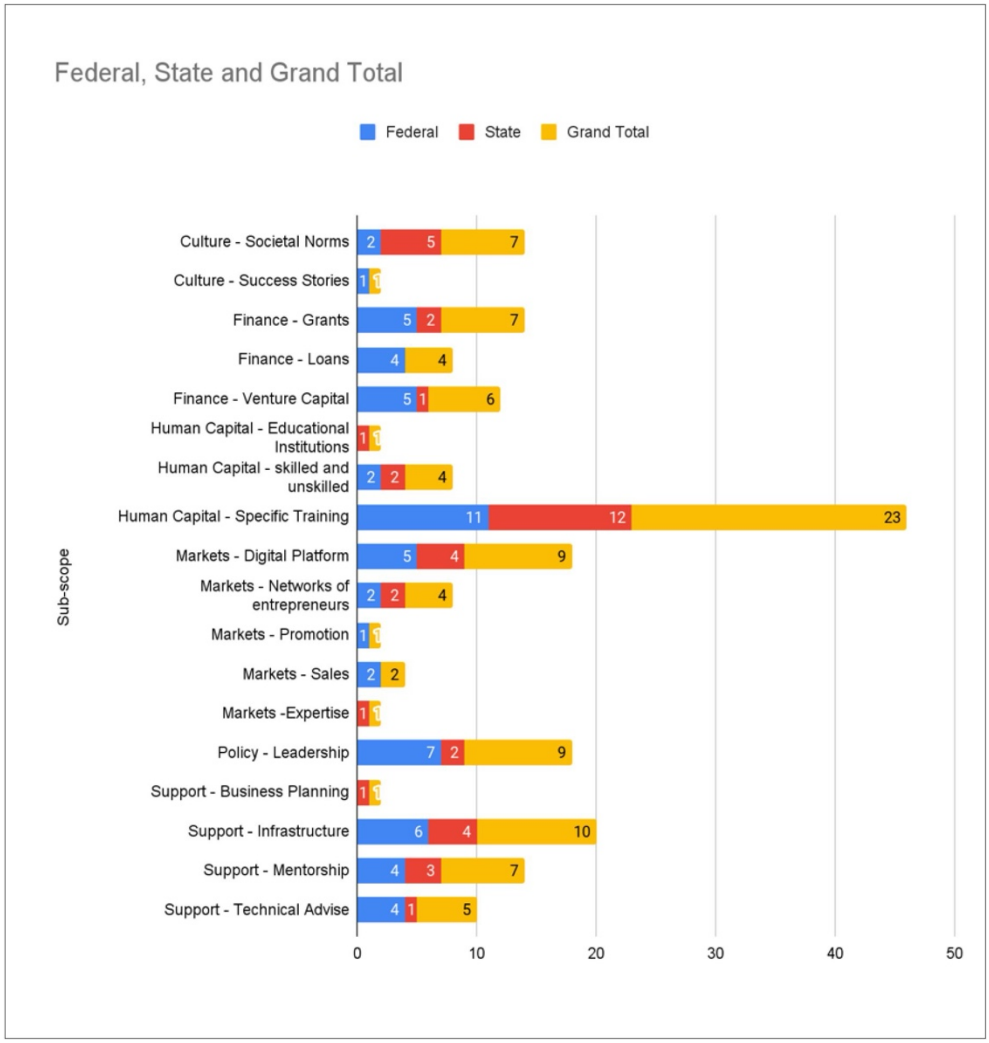


D.2 - A comprehensive list of the 50 DEIs categorised into the ecosystem domains.

Digital Market Access	Digital Human Capital	Digital Support & Infrastructure	Digital Entrepreneurship Culture and Innovation	Digital Finance and Investment	Digital Policy and Regulations
eWanita	Digital Innovation Hub			GoDigital (Grant)	Post-Covid Development Strategy
dBazaar	Anjung Usahawan		Digital Kenyalang	Digital Accelerator Village	Sarawak Digital Economy Strategy
desamall	Digital Accelerator Village		eWanita	Digital Financing Initiative (Microleap)	National Entrepreneurship Policy
Timogah	Tegas Digital Village/ Tegas Digital Innovation Hub			MDV Liquidity Financing for Tech Start-ups	Malaysia Digital Economy Blueprint
Digital Kenyalang	TEGAS' Tech Immersion Programme			MDV Technology Acceleration And Commercialisation Scheme (MDV-TACT)	National E-Commerce Roadmap
SAGO Incubator			National Technology & Innovation Sandbox Fund		National Tourism Policy 2020- 2030
Kamek Digital			Program Dropship dan Ejen (DNA)	MDV Commercialisation Financing Programme	Rural Development Policy (DPLB) 2030
MYStartup Pre Accelerator	Chinese Cross Border Ecommerce Study Centre	MyStartup Accelerator program			Shared Prosperity Vision 2030
E-Kraf Bazar	Digital immersion adoption	MYStartup Pre Accelerator		MYStartup Pre-Accelerator	The National 4IR Policy
Craft On The Go	The Sarawak Digital Enabler Program	MYStartup Dev		MYStartup Dev	
Shop Malaysia Online (Pelan Pemulihan Ekonomi Negara Jangka Pendek (PENJANA))	eUsahawan Komuniti	Micro Connector Programme		eTRADE Programme 2.0	
My Craft Shopee	eUsahawan Siswa	National Technology & Innovation Sandbox Fund		Program Pemerkasaan Usahawan Wanita (PUAN) Latihan dan Bimbingan Keuntungan Menu Tahun 2023 (PUAN)	
Program e-Dagang	eUsahawan Hab			Soft Financing for Digital and Technology (SFDT)	
MYStartup Bootcamp				Technology Advisory Service	
Program Dropship dan Ejen (DNA)		100 Go Digital (MDEC)		Bumiputera Enterprise Enhancement Programme (BEEP)	
Incubator Virtualisation Model (IVM)	Program Pemerkasaan Usahawan Wanita (PUAN) Latihan dan Bimbingan Keuntungan Menu Tahun 2023 (PUAN)	Incubator Virtualisation Model (IVM)			
	Pusat Ekonomi Digital (PEDi/ PIK/P1iM) Pusat Internet Malaysia				
	Pusat Internet Desa/ Telecentre (PID) / Rural Internet Centre				
	Rural ICT Guided Home-based Technopreneur	Smart Village Initiative			
	SME Digital Accelerator Program	Technology Advisory Service			
	SME Digitalise!				
	Technopreneur Training Academy				
	#MyDigital Maker				

	State Initiative
	Federal Initiative

D.3 - Federal and State Level Breakdown of DEI Ecosystem Domains



D.3.1- Categorisation of initiatives based on their respective definitions.

Categorisation of Initiatives	Definition
Entrepreneurship Initiatives	Initiatives that advocate for entrepreneurship in general, identifying of an opportunity or the creation of new ones to develop and commercialize new products and services (Hitt, 2001), without a key focus or emphasis on digital technology or the digital economy.
Digital Initiatives	Initiatives that focus on digitalisation programmes: self-organising, scalable and sustainable systems composed of digital entities and their interrelations to increase system utility, cooperation and innovation (Li, Du & Yin, 2017).
Digital Entrepreneurship Initiative	Initiatives that nurture, support and promote entrepreneurship with a key focus on digital technology, digitalisation of businesses and the digital economy. (Nedumaran et al., 2020)

D.4. – Glossary for Desk Mapping Study in Chapter 4.2

DEI: Digital Entrepreneurship Initiative

DEE: Digital Entrepreneurship Ecosystem

EE: Entrepreneurship Ecosystem

DPR: Digital Policy and Regulation

DHC: Digital Human Capital

DM: Digital Market Access

DSI: Digital Support and Infrastructure

DFI: Digital Finance and Investment

DCI: Digital Entrepreneurship Culture and Innovation

EP: Educational and Public Involvement

ES: Entrepreneurs and Startups

MSME: Micro, Small and Medium enterprises

RL: Rural Entrepreneurs

SG: Special Groups

TL: Technology and Innovation

Initiator: Federal

KKD: Ministry of Communications and Digital

KUSKOP: Ministry of Entrepreneur Development and Cooperatives

MOSTI: Ministry of Science, Technology and Innovation

MTEC: Malaysian Technology Development Corporation

MOTAC: Ministry of Tourism, Arts and Culture

MITI: Ministry of International Trade and Industry

KKDW: Ministry of Rural & Regional Development

MAFS: Ministry of Agriculture and Food Security

MEWC: Ministry of Energy, Water and Communications

Implementer: Federal

MDEC: Malaysia Digital Economy Corporation

MCMC: Ministry of Communication and Multimedia Commission

BPES: Bahagian Pembangunan Ekosistem Keusahawanan

INSKEN: Institut Keusahawanan Negara

CEDAR: Centre for Entrepreneur Development and Research

MDEC: Malaysia Digital Economy Corporation

SME Corp: SME Corporation Malaysia

MDC: Multimedia Development Corporation

MTEC: Malaysian Technology Development Corporation

NTIS: National Technology and Innovation Sandbox

Kraftangan Malaysia: Kraftangan Malaysia

Malaysia External Trade Development Corporation (MATRADE)

MIDF: Malaysian Industrial Development Finance Berhad

KKDW: Ministry of Rural & Regional Development

BPEK: Bahagian Pembangunan Ekonomi Komuniti

MFDB: Malaysian Fish Development Board

KKMM: the Communications and Multi-Media Ministry

PMB: Pos Malaysia Berhad

MDV: Malaysia Debt Ventures Berhad

Initiator: State

SDEC: Sarawak Digital Economy Corporation TEGAS: Tabung Ekonomi Gagasan Anak Sarawak

MWCWBWFC:Minister of Welfare, Community Well Being, Women, Family, and Childhood Development MINTRED: Ministry of International Trade, Industry and Investment

MANRED: Ministry of Modernisation of Agriculture, Native Land and Regional Development SECA & Swin: Swinburne University & Sarawak E-Commerce Association TEGAS: Tabung Ekonomi Gagasan Anak Sarawak SAINS: The Sarawak Information Systems Sdn. Bhd.,

UTS: University of Technology Sarawak WFDS: Women and Family Department of Sarawak YPPB: Yayasan Peneraju Pendidikan Bumiputera

Implementer: State

SDEC: Sarawak Digital Economy Corporation YPPB: Yayasan Peneraju Pendidikan Bumiputera SMA: Sarawak Multimedia Authority TEGAS: Tabung Ekonomi Gagasan Anak Sarawak

MWCWBWFC: Minister of Welfare, Community Well Being, Women, Family, and Childhood Development NRDA: Northern Region Development Agency

TERAJU: Unit Peneraju Agenda Bumiputera (TERAJU) *Prime Minister's Office SAINS: The Sarawak Information Systems Sdn. Bhd.

SECA & Swin: Swinburne University & Sarawak E-Commerce Association Hills, WAT, RD: Hills, WATSarawak, Retrospective Discovery Spay: Sarawak Pay

SAINS: The Sarawak Information Systems Sdn. Bhd.,

UTS, & GDAIB : University of Technology Sarawak & Guangdong AIB Polytechnic WFDS: Women and Family Department of Sarawak TEGAS: Tabung Ekonomi Gagasan Anak Sarawak

E

CODING TABLES

Included in this appendix are additional documents relating to the thematic coding process for Chapters 6 and 7.

Chapter 6 conducted four participatory design workshops across four sites in Sarawak. The workshop collected various data (detailed in Chapter 6.3.2) and were coded through reflexive thematic analysis. A sample of the coding table is presented here.

Chapter 7 adopted Margaret Archer's (1995) morphogenetic framework and incorporates the various data sets collected in each studies. The coding mechanism is explained in Chapter 7.2, while the coding tables are presented in this Appendix section.

E.1 Participatory Design Workshops Coding Tables

E.1.1 Reflexive Thematic Coding of Four Workshops

As detailed in Chapter 6.3.2 (p.174), each workshop were independently coded in generating codes, which were aggregated into sub-themes and themes. A sample of codes for each workshops is listed below:

Codes	Sub-Themes	Themes
Workshop 1		
Rejection of specified platform due to formal structure Market incompatibility, Business incomparability Expectations of 'what a seller is', and Exclusion of non-digital customers.	Rejection of specified platform due to incompatibility (business, culture, market, identity and customers).	Rejection of specified platform due to incompatibility (business, culture, market, identity and customers).
Acceptance of Whatsapp and Facebook due to perceived ease of use, ability for sociality, and perceived readiness of target audience. ...	Preference for social, negotiable and widely-adopted platforms rather than specified platforms. ...	Bricolage approach as a means of overcoming literacy, infrastructural, social and technological unfamiliarity ...
Workshop 2		
Emotions explored due to data from fieldwork unsure of DM, yet to experience, don't know how yet	DMs are distant from use, but MEs remain curious. Emotions of fear and disappointment if fail to sell on DMs.	DMs are distant and unfamiliar to RMES Platform owners and sellers are exclusionary and have parallel narratives

Codes	Sub-Themes	Themes
DM is synonym to FBmarketplace and Whatsapp No time Internet challenges Fear of using afraid people will not buy/ disappointment	Infrastructural impacts their use of digital tech Availability to learn is a challenge	
Sensory and embodied attributes are used by all four groups, showing the importance of these attributes to local epistemologies Socio-cultural narrative used by three of four groups, specifically culture, background and history. Emotions are also used by three of four, most using the term 'happy'. ...	Sensory and embodied attributes are prominently chose Socio-cultural and emotions have some preferences among the groups. ...	Sensory and embodied attributes are key attributes in conveying trust, emotions and socio-cultural narrative. ...
Workshop 3		
All five respondents linked “future” to plans, steps and commitments rather than to an imagined horizon. M2 immediately tied the future to children’s education and careers.	Futures were not abstract, but actionable Family and community-centred	Community Ethos and Cultural Resilience in the face of change

Codes	Sub-Themes	Themes
M3 pictured the future as a higher-tech realm that demands "tactical adaptation."	There is an implicit acceptance that change is coming and skills must keep pace; capacity-building in digital or agri-tech will feel relevant, not alien. Decisions appear relational. Structural factors matter but are viewed as enablers or constraints rather than prime movers. Seen as a doorway to wider markets and ideas. Connectivity is both influence and amplifier of other influences. High sense of agency	
An advanced system that helps work while he sleeps	Pragmatic, agency-minded and relationally influenced.	
system that helps with marketing, social media and website	Technology for Efficiency, visibility and sufficiency rather than scalability	Purpose-driven and culturally relevant technology
A future that benefits the whole community (financial, cultural, mobility) The opportunity to also influence the world through the values of the village (religion, practices, abstaining from vices).	Cultural preservation and identity, including religion, culture and social interaction. ...	...
Workshop 4		
How are local fruits prepared for eating How to tell if they are ripe How are they normally eaten	Tasting as marketing	Commerce is multisensory & embodied

Codes	Sub-Themes	Themes
Diversification of store fronts		
Live Video feature for seller's demonstration of products	Incorporation of locally accustomed modality in commerce	Incorporation of locally accustomed modality in commerce
Direct and sychronous interaction with customers		
Abandoning traditional 'marketplace' design that is static and non-interactive		
Innovation to traditional product to broaden market appeal (from crafts to fashion) - graduation, cultural events.		
Customisation feature in the design, for customer purchase (from sneaker culture)	Transcultural engagement to design	
...	...	...
Total Codes: 103	**Total Sub-Themes: 19**	**Total Themes: 17**

E.1.2 Meta-Theme Analysis

The themes of each workshop were then analysed in forming meta-themes that speak across all four PD workshops in relation to Research Question 2. Below is the five meta-themes, aggregated from the 17 key themes for the PD workshops.

Themes (17)	Meta-Themes (5)
Rejection of specified platform due to incompatibility (business, culture, market, identity and customers).	Modality of Commerce: Voice, Relationality, visibility, seller centrality, trust building
Bricolage approach as a means of overcoming literacy, infrastructural, **social** and technological unfamiliarity	Innovation in creating social Interaction, trust building, joy and agency through familiar and low-technical technology

Direct interaction over platform mediation as a trust-building and agentic process.	Homogeneity/ Formalisation of Platforms that alienates RMEs
DMs are distant and unfamiliar to RMEs - Platform owners and sellers are exclusionary and have parallel narratives	Multisensory & Embodied knowledge and practices
Sensory and embodied attributes are key attributes in conveying trust, emotions and socio-cultural narrative.	Local Values and Community Ethos/ Governance and context
Sensory and embodied attributes are key attributes in description of embodied knowledge	
Recognition of rural challenges in infrastructure, social capital, literacy and access to finance	
Direct communication with customers are default choice of interaction, mediated but not substitute through platforms in maintaining agency.	
Community Ethos and Cultural Resilience in the face of change	
Purpose-driven and culturally relevant technology	
Collaborative Governance and Platform Collaboration	
Digital Livelihood Reimagined that is multi-modality	
Commerce is multisensory & embodied	
Trust is relational and visibly personal	
Incorporation of locally accustomed modality in commerce	
Seller centricity - identifiability, distinguishability and connection	
Innovation from familiar and low-tech	

E.2 Morphogenetic Coding Process

Archer's morphogenetic approach distinguishes between three temporal sequences: T_1 (Structural and Cultural Conditioning), T_2–T_3 (Social Interaction), and T_4 (Structural Elaboration). Given the multi-method design of this study which has generated a distinct corpus of datasets, each dataset underwent a two-stage coding process, with the goal of answering the research question on explaining the digital platform disengagement among RMEs.

1. **Dataset-specific inductive coding**
   This included first-order, emic, and thematic coding, depending on the method.
2. **Second-order explanatory recoding**
   The datasets were then recoded into Archer's T_1, T_2-T_3 and T_4 framework.

As detailed in Chapter 7.2, each of the datasets was coded or analysed in its own terms before mapping onto the morphogenetic framework.

E.2.1 T_1 Structural and Cultural Conditioning

Elite Interview Data Processing (First-Order Inductive Coding)

Elite interview transcripts were first openly coded in Nvivo, based on their relevance to the research questions (RQ1, RQ2 and RQ3). A list of 322 primary codes was generated from this exercise, organised around patterns relevant to the research question.

These first-order codes captured the perspectives and logics of digital marketplace platform managers and executives, policy actors, initiative implementors and government agencies.

A sample extract of primary codes is provided below:

Primary Codes	Sources	References	Created on
Platform manager's aim to grow sellers to draw commission from sales	1	1	10 Feb 2025 at 1:59:03 PM
Varied types of entrepreneurs that access the hub	1	1	10 Feb 2025 at 11:22:00 PM

Fixation on 'tech' start up as a goal for digital hub	3	10	10 Feb 2025 at 11:41:03 PM
MP Office's attempts with marketplace platform	1	1	3 Feb 2025 at 11:46:04 AM
Sarawak's focus on becoming a high income state	1	2	3 Feb 2025 at 11:49:58 AM
Failure of mainstream platform due to lack of long-term commitment locally	1	3	1 Feb 2025 at 4:43:46 PM
Failure of local platforms due to copy & pasting business model	1	2	1 Feb 2025 at 4:47:12 PM
Subscription model digital marketplace that minimises the cost of participation for sellers	1	2	1 Feb 2025 at 4:56:26 PM
Information search and use of network to verify ideas	1	2	1 Feb 2025 at 4:56:55 PM
Simplicity and common sense needed in platforms	1	3	1 Feb 2025 at 5:14:02 PM
Structuring care and responsibility in the marketplace business model	1	4	30 Jan 2025 at 3:06:18 PM
Challenges of working with rural communities	4	13	29 Jan 2025 at 5:37:59 PM

Secondary Coding (Second-Order Explanatory Coding using Archer's T_1)

The primary codes generated from open thematic coding were then recoded through a secondary coding based on the Morphogenetic temporal sequence. The stakeholders' top-down perspectives provided insights primarily informing the T_1 structural and cultural conditionings that shape RME's disengagement.

The table below demonstrates how the primary codes from E.2.1.1 are abductively coded onto the T_1 Structure and Culture nodes:

	T_1 Structure – Policy/Platform	**T_1 Culture – Policy/Platform**	**T_1 Structure – Rural Community**	**T_1 Culture – Rural Community**
Sources	**Code / Theme**	**Code / Theme**	**Code / Theme**	**Code / Theme**
Platform T	Adapting DM business model based on market response	Platform narrative to 'inspire' rural communities toward commercialisation potential of rural products	Challenges of rural communities in using DMs due to infrastructural constraints	Perception of RMEs as lacking market readiness
	Agencies paying marketplace platform to run paid programmes	Start-up discourse and funding pitching culture	Geographical remoteness limiting platform reach	Norms of simplicity and direct communication in marketplace interaction

	Barriers of using digital platform – information-heavy workflows	Training community seen as distraction for platform operators	Absent of digital training provisions in rural areas impacting capacity building	Entrepreneurial practices shaped by kinship, trust and social network norms
	Challenge of balancing support of sellers and customer development	Lifestyle as a means of adoption rather than traditional training and learning	Availability of 'alternate' digital platforms and channels in rural settings.	Bidayuh culture shaping views on entrepreneurship
	COVID-19 lockdown as an 'enabler' for digital marketplace platforms	Normative expectation for RMEs to meet urban-product readiness		
	English UI/UX that are not localised for RMEs			
	Resource constraints (limited programming capacity)			
	E-commerce ecosystem lacks supportive system for rural products			
	Government agencies replicating digital marketplace models; involvement in local platforms; investor introductions			
	Financial sustainability and scaling challenges of platforms in Sarawak			
	Platform-centralism – sellers not directly involved in online selling/ Regulation of a country impacting digital behaviour			
Platform BB	Government tech bans affecting use locally	Empathetic business model in digital marketplace	Challenges of working with rural communities due to remoteness	Inconsistency or informality of rural businesses
	Platform's long-term plan for rural sellers	Building a network of trust	Cash on Delivery and QR Pay options unavailable	Strong local social network
	Entrepreneurship training with agencies	Human touch in supporting sellers advocated	RME not having access to bank accounts	Collective caution toward formal digital platforms
	Targeted number of sellers on the platform by 2025	Insistence of not copying and pasting mainstream models	Seasonality of rural produce	Community narratives of prior negative platform experiences

	Subscription model minimising cost for sellers; sharing benefits with stakeholders	Structuring care and responsibility in marketplace model	Geographical differences in seller response to cost structures	
	Smaller digital marketplace platforms in market	Cash or QR Pay as normalised options	Limited market access channels for rural businesses	
	Human resource dictating platform capability			
	Scalability issue due to lo-fi solution			
	Outsourcing app development			
	Conventional DMs abandoning sellers post-onboarding and lack sustained support.			
	Exclusive policy with a platform that provides further benefits			
Platform TT	Digital Marketplace Platform Business Model – Off and Online	Focus on high GMV sellers	Challenges of working with rural communities due to infrastructure	Informal work norms among RME complicates engagement
	Mainstream focus on established brands	Supporting sellers through marketing	Geographical disadvantages of Sarawak in eCommerce logistics	Business leadership by older generation, shaping attitudes to digital adoption
	Training from account managers of mainstream platforms	CSR focus on rural outreach by mainstream marketplaces	Group-buy model in high-density regions misaligned with sparse rural areas	Live interaction between sellers and buyers a potential alignment with RME
	Lack of incentive to support micro-entrepreneurs	Preference for capable sellers	Unique products of Sarawak for ecommerce	
	Platform managers' marketing support within platform limits	Narrative of growing online shopping trends in Malaysia	Digital literacy challenges of RME in rural regions	
	Hyperlocal ecommerce through geo-lock; hyperlocal focus limits growth	Perceived consumer preference for 'Shopertainment' models		
	Competition on price	Premium products' difficulty online		
	Government as key stakeholder			

Platform L	Categories of products require different ecommerce strategies	Perceived buyer behaviour norms (impulsive purchasing) shaping platform strategy	Challenge of sellers' digital literacy on digital platforms	Older generation norms in business
	Departmental misalignment between online and offline sales	Preference for high-revenue sellers		Struggle to rebrand traditional businesses
	Incubation shifting from small sellers to international brands	Normative belief in livestreaming as the preferred digital selling culture		Embedded relationship-based selling
	Online resources replacing personal touch in seller support	Enablers' prescriptive narratives of how digital commerce 'should' be built		
	Platform managers' role in incubation and post-incubation support	Sales targets conflicting with marginalised seller needs		
	Platform manager explaining offline vs online business to MEs	Pereceiving the need for RME to understand online target audience		
	3-month incubator programme + post-support			
	Platform constraints in supporting experiential/luxury product categories			
E-commerce Enabler	Minimal cost of engaging enabler	E-commerce platforms target impulsive buyers	Low literacy levels shaping digital adoption outcomes and needs	Cultural importance of trust-building among Malay-market buyers in e-commerce
	Government-backed e-commerce enabler	Platform's focus on price deals over convenience		Cultural preference for using familiar social platforms as low-barrier selling channels
	Enabler companies not working with rural RME	Belief that simplified UI is necessary to influence buyer behaviour		Limited digital skills and confidence inhibiting livestream selling
	Strategic prioritisation of price deals in enabler service model	Scalability as prerequisite for enabler participation		
	Online and offline experience for luxury brands			
	Market drivers motivating clients to engage enabler services			

Federal Govt Agency	Proposal for a unifying platform for funding/activity info	MyDigital focus fostering start-up culture	
	Support for MSMEs in funding digitalisation	Policy discourse equating digital inclusion with MSME digitalisation	
	Silo in government digitalisation initiatives	Policy assumption that rural digital adoption will mirror urban adoption	
	Government management of initiatives to streamline	Mapping of agencies and target groups unclear	
	Policy priorities in Digital Economic Blueprint	Top-down digitalisation of cashless programme	
	Monitoring mechanisms of initiatives	Narrative positioning Sarawak as a first-mover in digital economy policy	
	Recognition of inequitable financial support	Lack of transparency and clarity in initiative implementation	
Federal Gov Agency – Digital Training	Collaboration between federal and state initiatives	Cultivating digital entrepreneurship culture in universities	No funding mechanism for training in rural areas
	Digital entrepreneurship training aligned with govt direction	Government goal for gig economy digitalisation	
	Digital training to students and micro-entrepreneurs	Long-term planning for entrepreneur development	
	KPI-setting for training and budgeting	Filtering out non-digital literate participants	
	Multiple agencies overlapping		
	Frequent policy shifts affecting programme continuity and effectiveness		
State Gov Official – Strategic Policy	Sarawak's focus on becoming a high income state	Human touch alongside technological advancement	
	Sarawak's focus on sustainable development – leaving no one behind	Openness to sustainable technology – hydrogen	

Private Incubator – Food Entrepreneurs	Incubator organising food incubation programme for marginalised groups	Incubators focus on entrepreneur behaviours, not just profit	Spreading initiative outside major cities	Traditional food practices limiting experimentation
	Incubators providing business acumen, innovation, mentorship	Digital entrepreneurship training to also focus on entrepreneurship	SAGO Engagement post-incubation	Need to understand digital & non-digital models
	Incubators providing networking opportunities	Social-based incubator model (shoestring budget)		
State-funded Digital Hub (Rural Town)	Collaboration between federal & state initiatives in DEI	'Lazy to learn' perception of rural ME	Remote areas lacking hub/internet centres	Contentment with stable, low-risk livelihoods reducing motivation for digital transition
	Digital training by HQ with allowance	Digital hub's expectation of tech start-ups	Trainers going out to communities	Needs-based vs opportunity-based entrepreneurship
	Standardised training not suiting local context	Success stories of digital ME	Logistical opportunities for rural RME	
	Cooperation as business model for rural selling	Hub as intermediary between sellers & platforms (suggestion)		
	Collaboration with trainers at digital hub	Local entrepreneur as trainer & seller		
Local Digital Hub Owner (State-funded)	Accessibility of training programmes in community spaces	Digital hub's focus on entrepreneurship and digitalisation	Practical difficulties delivering training in dispersed rural areas	Certain groups remain structurally under-represented in entrepreneurship initiatives
	Governmental digitalisation agencies (SDEC)	Digital Innovation Hub claims to support start-ups beyond tech		Low uptake of existing initiatives and grants among rural entrepreneurs
	Other initiatives & grants not widely adopted	Participatory curation of training programmes		
	Overview of entrepreneurship initiatives for strategy	Local hub's delegated authority to negotiate KPIs with Innovation Hub		
	Need for more funding to support entrepreneurs	Normative targeting of youth for digitalisation		

Federal Rural Digital Economic Centres (PEDi)	Classification of rurality based on PEDi	Initiative's goal of cultivating a 'digital entrepreneurship culture' in rural areas	Infrastructural readiness impacting rural entrepreneurship	Collaborative ethos among rural users of PEDi (waiving fees)
	Funding mechanism of rural internet centres	Fixation on 'tech' start-up as a goal for digital hub	Logistical challenges in Sarawak	Certain groups remain structurally under-represented in the local digital entrepreneurship ecosystem
	PEDi directs entrepreneurs to finance agencies	Value for outreach to wider community despite not core KPI	Rural entrepreneur training via internet centres	
	PEDi focus on infrastructure, culture & market access	Normative spport to digitalised rural products	Marketplace pick-up/drop-off facilities	
	CSR fund through telco taxes	Tailorisation of support based on rurality		
	Measuring success of PEDi (KPI)	Prioritising hiring from local communities		
	Sustainability challenges post-funding			
	Institutional advocation for local digital marketplace platforms			
Gov-Linked VC	Protective policies for state-based companies	Fixation on 'tech' start-up as a goal for digital hub		
	State's initiative to have their own venture capital company	VC focus on ROI without DEI considerations		
	Financing and supporting tech businesses for growth	Normative prioritisation of start-up-centric support and development		
	Formalised pitching rounds as required process in VC funding ecosystem	Balancing profitability & developmental role		
	Listing on stock exchange as key success indicator			
	Availability of formal support schemes for start-ups (grants, accelerators, advisory)			
	Digitalisation initiatives are at an early			

	developmental stage.	
	VC funding from government – taxpayers' money Lack of supportive ecosystems for start-ups	
Rural MP Office	MP Office initiation of marketplace platform project Platform fees deterring use of digital marketplace Presence of limited DM platforms in the area.	Close-knit communities & buyer–seller relationships Direct communication preferred for transparency Preference for low-barrier, relational communication channels (e.g., WhatsApp Groups) Preference for simplistic, user-friendly platforms

Ethnographic Data Themes Coded onto T_1

	T_1 Structure – Policy/Platform	T_1 Culture – Policy/Platform	T_1 Structure – Rural Community	T_1 Culture – Rural Community
Sources	Theme	Theme	Theme	Theme
Ethnographic Data	English-based platform user-interfaces as barriers to RME	Lack of locally contextualised training models and outreach mechanisms	Lack of basic infrastructure (road access, internet connectivity).	Cultural norms of trust-building through repeated face-to-face interaction Reliance on multi-sensory cues (smell, touch, taste) for product evaluation Marketplace as social space for reciprocal exchange and relational maintenance Flexible, negotiated pricing embedded in social ties Collective labour in business operations (family/community help) Cultural norms of respect, hospitality, and modesty shaping customer engagement. Risk aversion shaped by subsistence orientation Informal marketing via WhatsApp & word-of-mouth Preference for personal resolution of disputes Communal and relational labour often undertaken by women (e.g., church fundraising, paddy groups). Importance of physical display and stall layout Valuing flexibility over strict schedules

E.2.3 Participatory Design Workshop Themes Coded onto T_1

	T_1 Structure – Policy/Platform	T_1 Culture – Policy/Platform	T_1 Structure – Rural Community	T_1 Culture – Rural Community
Sources	Theme	Theme	Theme	Theme
Participatory Design Workshop	Absence of offline-to-online integration	Lack of recognition for informal product quality verification		In-person selling as the default interactional mode
	Limited logistical flexibility in mainstream platforms	Platform onboarding assumes prior digital literacy		Co-design revealed preference for culturally resonant branding and imagery
	Rigid product categorisation on platforms			Collective seller accounts or cooperative-style profiles
	Lack of formal mechanisms for integrating rural seller input into platform design			Importance of maintaining relational customer interactions
	No pathways for platform localisation			Marketplace as place of cultural exchange
				Sensory qualities in representing rural products
				Peer-to-peer learning valued
				Alternative success metrics

E.2.4 Desk Study Themes Coded onto T_1

	T_1 Structure – Policy/Platform	T_1 Culture – Policy/Platform	T_1 Structure – Rural Community	T_1 Culture – Rural Community
Sources	Theme	Theme	Theme	Theme
Mapping Study (Desk)	Federal & State initiators/implementers' objectives and logics	Start-up/innovation bias in DEI language		
	Target groups concentrated on entrepreneurs (ES) and MSMEs	"Skills/awareness" narrative		
	Domain under-emphasis: Digital Culture & Innovation (DCI) over DSI/DFI	Celebration of "innovation" & "entrepreneurial mindset"		
	Digital Finance & Investment (DFI) narrow targeting	"Bankability" & scalability as worthiness signals		
	Evidence of silos & duplication across agencies/programs	Modernisation narrative		
	Mixed evidence of collaboration (some cross-actor efforts)	"Partnership" rhetoric with private platforms		
	Federal/state KPI-driven programming	Performance culture focused on counts		
	Initiative growth since 2018; ecosystem still maturing	"Readiness" discourse for finance		
	Mapping to Isenberg EE (adapted)	Formal ecosystem templates dominate		
	Targeting maps (Fig. 4): ES/ MSME dominate; weak for under-represented groups	Meritocratic tone in documents		
	Desk-to-interview triangulation: finance access low for ES/DSI			

E.2.2 $T_2 – T_3$ Social Interaction

In T_2–T_3, the social interaction of RMEs with the structural and cultural conditionings of T_1 are analysed by mapping the primary emic and themes from the ethnographic data and participatory design data onto the T_2–T_3 process.

Source	T_2 Interaction (Observed Social Interaction)	T_3 Outcome (Observed Pattern/Consequence)	Sub-Theme (10)	Final Theme
Ethnographic	Attempts to onboard onto DM platforms disrupted by literacy, English UI, or workflow complexity	Failure or postponed digital platform use, despite being interested.	Accessibility & Infrastructural Misfit	**Deferred Participation**
Ethnographic	Reliance on intergenerational mediation for onboarding tasks	Age- and literacy-mediated digital participation	Onboarding burden & usability barriers	
Ethnographic/	RMEs expressing frustration with DM onboarding	Conventional platforms with higher onboarding burden are not adopted		
Ethnographic/ Participatory Design Workshops	Emotional fear and feelings of alienation	Non-engagement with digital platforms		**Resistance & Rejection**
Ethnographic	Trial use of DM platforms followed by abandonment due to negative experiences (unsanctioned discounts, failed payments, unwarranted promotion)	Withdrawal from DMs; low re-engagement rates; platform avoidance		
Ethnographic	RMEs losing trust on DMs due to unresolved conflict	Platforms rejected as avenues for digital commerce	Loss of trust after negative experiences	
Ethnographic	Community sharing of negative platform experiences	Collective caution; shared distrust; pre-emptive withdrawal	Collective Caution of Formal Marketplaces	
Ethnographic	Selective shift toward WhatsApp/Facebook instead of DM platforms for selling	Stabilisation of informal/hybrid digital commerce networks	Informal, collective and cooperative practices and workarounds	**Bounded Adoption**

Ethnographic	Trying e-pay but reverting to cash due to errors & trust issues	Digital payments seldom used; reliance on cash-on-delivery	Using platforms only when necessary or convenient	
Participatory Design Workshops	Hyperlocal matching (geo-lock) proposed to overcome logistics problems	Digitally bounded local markets; desire to avoid mainstream logistics	Informal channels becoming the common ways to sell	
Ethnographic/ Participatory Design Workshops	Integration of social media selling within marketplace backend	Recognition of informal sales channels practices		
Participatory Design Workshops	Seller-first e-commerce logic that features sellers' information, voice, and narratives	Preference for showcasing stories, origins, and process photos in listings	Difficulty showing product qualities online	**Appropriation & Subversion**
Participatory Design Workshops	RME designs that has sensory and interactional features (videos, testimonials, direct message functions)	Reappropriate WhatsApp to recreate sensory and interactional 'marketplace'	Establishing of hybrid commerce practices	
Participatory Design Workshops	Mentorship, peer-support, community chat	Platform-layered peer-learning pathways	Commerce shaped by personal relationships	
Participatory Design Workshops	Integrating WhatsApp/FB features for bricolaging commerce digitally	Formal legitimisation of RMEs' preferred hybrid selling channels		
Ethnographic	RME redesigning DM platform based on relational and seller identity	Lack of technical and financial backing to scale the platform, resulting in low adoption.		
Ethnographic/ Participatory Design Workshops	Proposing voice/video-based selling based on existing practices	More accessible digital selling imagined		

E.1.3 T_4 Structural Elaboration

The outcomes of the structural elaboration are synthesised from ethnographic fieldwork data, PD workshop data, and elite stakeholder interview data. These are also reported in Chapter 5.5 and Chapter 7.4

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