

THE IMPACT OF JENDELA IMPLEMENTATION ON INTERNET ACCESSIBILITY AND BUSINESS PRODUCTIVITY AMONG FAMILY BUSINESSES IN SABAH AND SARAWAK, MALAYSIA: A CASE STUDY

ZALENA MOHD^{1*}, NURKHALIDA MAKMOR², THANUJA RATHAKRISHNAN¹, THIVASHINI B JAYA KUMAR¹ AND HIDHIR MOHAMED³

¹School of Management and Marketing, Faculty of Business and Law, Taylor's University Lakeside Campus, 47500 Subang Jaya, Malaysia. ²Faculty of Business and Management, Open University Malaysia, 47301, Petaling Jaya, Selangor, Malaysia. ³Department of Management Science, Strathclyde Business School, University of Strathclyde, G1 1XQ Glasgow, United Kingdom.

*Corresponding author: zalena.mohd@taylors.edu.my

<https://doi.org/10.46754/umtjur.v7i2.498>

Submitted: 15 April 2024

Revised: 20 May 2025

Accepted: 6 July 2025

Published: 15 October 2025

Abstract: The National Digital Network (JENDELA) initiative represents a significant national effort to improve digital infrastructure and connectivity across Malaysia, particularly in underserved and rural areas. While the initiative aims to enhance internet accessibility and foster digital inclusion, the actual impact of JENDELA on family businesses, especially those located in remote regions such as Sabah and Sarawak, remains underexplored. Thus, an in-depth focus group study was performed to gather insights from representatives of family businesses operating in the target regions. The objective of this study is to examine the impact of the JENDELA initiative on internet accessibility among family businesses in Sabah and Sarawak. The findings from the focus group discussions provided insights and information on family businesses in the context of JENDELA. The findings can be instrumental in informing decisions and implementing effective strategies to support family businesses. Accordingly, improvements that contribute to increased business productivity, cost savings, and revenue growth are essential for the sustainability and success of family businesses. While the research emphasised the benefits of JENDELA, it also highlighted challenges and disparities, particularly related to affordability and varying infrastructure conditions in rural areas. Overall, this focus group study contributes a unique perspective that helps to explain how JENDELA has affected family businesses in the region. In addition, the insights gained from the participants shed light on the practical implications of digital infrastructure improvements. It also offers valuable guidance for policymakers and stakeholders seeking to further enhance digital connectivity and support the growth of family businesses in Sabah and Sarawak, Malaysia.

Keywords: Business productivity, family business, internet accessibility, JENDELA.

Introduction

Pelan Jalanan Digital Negara (JENDELA) is a nationwide initiative in Malaysia to enhance digital connectivity and expand internet accessibility throughout the country. The effort aims to improve the broadband infrastructure and ensure universal access to high-speed internet services for all Malaysians, especially those residing in rural and remote regions. With the development of the digital economy and e-government, the adoption of technology has made internet connection a necessity. Notably, the internet users survey by the Malaysian

Communications and Multimedia Commission (MCMC) stated that 88.7% of the population used the internet in 2020, an increase from 87.4% in 2018.

The increase in internet usage is also reflected in the adoption of technological advancements, such as video and voice calls, financial transactions, and cloud storage (IUS, 2020). These figures are on the rise, despite lower figures for those using the internet for work-related activities or to buy and sell online. During the crisis, e-commerce revenue reached

RM896.4 billion in 2020, a 32.7% increase compared to 2019. Google, Temasek, and Bain & Company's annual Southeast Asia e-economy 2021 report stated that Malaysia recorded three million new digital consumers since the start of the pandemic (Baijal, A. *et al* 2022).

Almost 70% of total business establishments in Malaysia are family-owned, ranging in size from small to large conglomerates (Ahmad, 2022). Several well-known firms are controlled by family members, and the number of these businesses has been increasing in Malaysia, with many listed on Bursa Malaysia due to their positive long-term growth (Bursa Malaysia, 2018). Although some well-known family businesses in Malaysia, such as Tan Chong, Sapura, Oriental, YTL, Melewar Group, Berjaya Group, and Genting, play a significant role in various economic sectors, there are small family companies, such as Habib and Kamdar, that retain their businesses in their sectors. However, it remained unclear how many of these businesses relied on internet connectivity for their daily business transactions.

In Malaysia, family companies are reported to contribute more than half of Malaysia's Gross Domestic Product (GDP) (Nguai 2002). Malaysia's "family businesses" make up approximately 70% of the listed firms and contribute tremendously to GDP (Amran & Ahmad, 2010). The contribution remains at the same rate reported by the Family Business Survey (2021). During the COVID-19 pandemic, more than 70% of family businesses experienced a decline in profits. It was during the same period that numerous small sellers decided to take a step forward and establish an online presence, though some family businesses remain hesitant to go online. Consequently, many family businesses are struggling to keep pace. Therefore, it is essential for a country to promote the sustainability of family-owned companies. This aligns with the goal of providing a comprehensive understanding of the improvements that contribute to increased business productivity, cost savings, and revenue growth, which are crucial for the sustainability

and success of family businesses. To provide a clear picture of the initiative on internet accessibility and business productivity within family businesses located in Sabah and Sarawak, a case study is conducted.

Literature Review

Family Businesses in Sabah and Sarawak, Malaysia

Family businesses play an essential role in the economic landscape of Sabah and Sarawak. The richness in cultural diversity and natural resources in these two states has seen the surge of numerous family-owned enterprises, contributing to local employment and economic development. Past studies on family businesses in the Malaysian context suggest that these businesses often exhibit distinctive traits compared to non-family enterprises. For instance, a study by Mihotić, Raynard, and Sinčić Ćorić (2023) emphasised that family businesses are generally resilient during economic challenges due to strong family ties and an emphasis on tradition. Moreover, family businesses in Sabah and Sarawak often have close ties with indigenous communities and strong familial connections, reflecting the significant support for businesses in these regions (Ali, Ahmad, & Ghani, 2020; Yap, Keling, & Ho, 2023).

However, a pertinent issue facing these family businesses is the challenge of digital connectivity. While the business world is changing at a rapid pace, the limitations and challenges surrounding the digital infrastructure in Sabah and Sarawak have hindered these enterprises' ability to reap the benefits of the digital age. Prior research indicates that the gap in digital access between urban and rural areas, as evident in Sabah and Sarawak, can have an unfavorable impact on the ability of family businesses in these regions to remain competitive and sustainable (Bala & Tan, 2021; Fang *et al.*, 2022; Horn & Gifford, 2022).

The literature underscores that the digital connectivity issue is a matter of infrastructure and a question of digital literacy and technology adoption. Research by Wong and Tan (2019)

demonstrated that family businesses in Sabah and Sarawak often face hurdles in integrating digital technologies into their operations due to a lack of knowledge and resources (Bala & Tan, 2021; Dawayana *et al.*, 2021). The gap in digital skills and competencies further exacerbates their ability to adapt to changing market dynamics. This, in turn, has implications for their long-term growth and survival in an increasingly digitalised business environment.

Digital Accessibility and Business Productivity

Digital connectivity is a revolutionary force that is reshaping the business landscape today. Internet connectivity enables individuals and businesses to access global markets, government services, other individuals, and a wide range of social and economic opportunities. Furthermore, digital services such as e-payments, e-commerce, and e-identification are transforming business models and altering the way that goods are consumed and supplied within the wider economy (Zapata-Cantu *et al.*, 2023). Building on this, digital connectivity has been a major driver of development in emerging markets over the past two decades, according to research. By expanding markets, boosting business and government efficiency, and encouraging innovation across traditional sectors, digital connectivity has the potential to increase economic output, create jobs, and reduce poverty (Strusani & Hounghonon, 2020).

According to Gregori and Holzmann (2020) and George, Lakhani, and Puranam (2020), digital technologies facilitate the creation of novel business models and value propositions that integrate environmental, social, and economic values. They also enable new practices that provide entrepreneurial prospects. In the current era, digital connectivity has become indispensable for family-run enterprises. Correspondingly, family businesses can operate more efficiently, communicate better, and reach a wider audience thanks to digital connectivity.

Digital connectivity enables businesses to engage with customers more deeply through social media, targeted advertising, and

personalised marketing, all of which are now essential for customer engagement. In addition, businesses can boost revenue, improve brand loyalty, and fortify customer relationships by skillfully employing digital platforms for customer communication. Moreover, digital connectivity provides businesses with the ability to compete on a larger scale in a world that is becoming more interconnected. Chaffey and Smith (2022) suggested that online presence, digital marketing, and e-commerce increase market reach and competitiveness. According to them, businesses that adopt digital strategies experience gains in income and market share, demonstrating the significance of digital connectivity for obtaining a competitive edge.

Consequently, in today's rapidly changing business environment, digital connectivity has emerged as an essential tool for family-owned businesses' survival and expansion, enabling them to seamlessly blend tradition and innovation. Thus, family businesses need to prosper in an interconnected world, which means ensuring a safe and inclusive digital environment.

Methodology

Purposive sampling, also known as judgmental sampling, is a non-probability sampling technique commonly employed in qualitative research. In purposive sampling, researchers intentionally select participants who possess specific characteristics or have unique experiences related to the research question. In particular, the goal is to identify and recruit participants who can provide rich and diverse data to enhance the research findings. Additionally, purposive sampling is used when researchers seek to identify individuals or groups with knowledge, skills, or experiences relevant to the research question. In essence, researchers can better understand the phenomenon under investigation by selecting individuals with relevant backgrounds.

Sampling helps make the data collection process feasible from the perspectives of effectiveness, accuracy, speed, and the

availability of the population segment (Cooper & Schindler, 2010). For the present study, the purposive sampling technique will be employed, based on an intentional selection of participants. The researchers pursue participants' willingness (Lewis *et al.*, 2006) to provide the information non-randomly.

A focus group technique was implemented involving participants who are already in their business in Sabah and Sarawak. Accordingly, 20 family business operators were approached, and eight respondents agreed to participate in the focus group. These participants represent family businesses operated by three ethnicities: Malay, Chinese, and Indian, or others. These respondents are the decision-makers of commercial organisations who possess both the ability to influence the business vision and the willingness to use this ability to pursue distinctive goals (Nasution, Rafiki, & Pahlufi, 2021). Furthermore, the study sample comprises possible units as data collection is based on selecting a segment of the population from the target population, representing the entire population in accordance (Sekaran, 2003). For the purpose of the present study, respondents had to be (a) the entrepreneur-founder, (b) the primary owner of the business, and (c) identify the business as a family business. All firms in the sample were first-generation family businesses in which the entrepreneur or founder was still the head of the organisation.

The present study is also exploratory in nature, and data collection was conducted by self-administered and open-ended questions (Bradburn *et al.*, 2004). The interview questions prepared for semi-structured interviews correspond to issues, challenges, sustainability, and the impact of technology. It was also designed based on literature and researchers' observations of the present condition of the implementation of internet accessibility and business productivity amongst family businesses in Sabah and Sarawak. Note that the negative and prolonged questions and technical language were excluded from interview questions (Bryman *et al.*, 2007). Meanwhile, simple and easy-to-understand

interview questions were adopted to gain an in-depth understanding of sustainability and the success of the family business.

To enhance transparency and contextual clarity, a summary table outlining the key interview themes and sample responses is provided in Table 1. This supports the thematic analysis and offers insight into the nuanced views of the participants, further enriching the methodological rigor and findings of the exploratory study.

Results and Findings

With rapid changes in commerce and technology, family businesses are faced with new sets of issues and challenges. This study is to investigate the impact of JENDELA implementation on internet accessibility and business productivity amongst family businesses in Sabah and Sarawak. As such, findings are presented under four themes: Awareness, quality of connectivity, affordability, and business productivity, with insights from the respondents embedded to enrich understanding.

Awareness of JENDELA and Internet Usage

Prior to the adoption of JENDELA in Malaysia, numerous obstacles existed regarding internet access and connectivity, particularly in rural and isolated regions (MCMC-MyConvergence, 2020). Some of the key challenges include infrastructure limitations, geographical factors, low population density, cost barriers, limited educational resources, and digital literacy. Specifically, the JENDELA effort aimed to address these obstacles by allocating resources to enhance digital infrastructure, enhance connection, and advocate for digital literacy programs. The purpose of these initiatives was to narrow the gap in internet connectivity between urban and rural regions, thereby ensuring that all Malaysians can access the opportunities and advantages provided by the internet.

Interview question:

- (1) *Are you aware of the JENDELA initiative?*
- (2) *How do you currently use the internet in your business?*

Notably, 20% of respondents are aware of JENDELA's plan to formulate and provide wider coverage and better quality of broadband experience for the Rakyat, whilst preparing the country for 5G technology. Some respondents used the internet moderately. However, the majority heavily used the internet for business, as stated by a respondent from Sabah:

"I used the internet for work, social media, and my CCTV. I promote my products via Instagram, and orders from customers are from my website" (Respondent 1)

Internet usage in Sabah and Sarawak averages more than five hours a day, making it an essential tool for daily activities and indicating a significant reliance on the internet for various aspects of business. In other words, the average hours of internet usage suggest that the diverse roles the internet plays in supporting communication, work, education, entertainment, and overall well-being.

The disparity between high internet usage and low awareness of the JENDELA initiative suggests that while digital dependency among family businesses is strong, national infrastructure efforts such as JENDELA are not effectively reaching or resonating with their intended audience. This implies a potential disconnect in communication strategies, highlighting the need for more localised, accessible, and targeted outreach to ensure that such initiatives are implemented, understood, and utilised by rural business communities.

- Respondent 3 (Sabah): "JENDELA? I think I've heard the name, but I don't know what it's really about or how it helps me".
- Respondent 5 (Sarawak): "I use the internet for almost everything. We take orders through WhatsApp and update our promotions on Facebook every day".
- Respondent 7: "My children help me with Instagram. I don't understand it all, but it brings in many young customers. We sell handmade baskets and bags".
- Respondent 2: "Even my CCTV runs on the internet. If the line goes down, I can't monitor my shop remotely".

To generate awareness about JENDELA activities, it is crucial to communicate the program's objectives, advantages, and advancements to the intended audience in an effective manner. Among the strategies to raise awareness of JENDELA are multichannel communication, public events, and workshops. This includes collaboration with local leaders and influencers, educational campaigns, digital marketing, and school and educational programs. Utilising a blend of these strategies includes the establishment of an awareness campaign that effectively reaches various demographics and promotes comprehension and endorsement of JENDELA programmes.

Quality of Connectivity

Interview questions:

- (1) How would you describe the quality of your internet connection?
- (2) How does the quality of the internet impact your business?
- (3) What challenges do you face with internet connectivity in your area?
- (4) How do you deal with those challenges?
- (5) Are you aware of any platforms or programs like JENDELA that can help with connectivity issues?

The success of JENDELA in improving connectivity in East Malaysia is likely to depend on several factors, including infrastructure development, policy implementation, and ongoing efforts to address the region's unique challenges. An internet connection is essential for family businesses for various reasons, contributing to efficiency, growth, and competitiveness (Hay, R, 2020).

Respondent 1 commented, "*Internet connection is very unstable in certain areas.*" This is supported by Respondent 8, who stated, "*Internet connection in the village is below average; therefore, I had to use ConnectMe.*" Quality of internet connection is further described by Respondent 4, "*In rural areas in Sarawak, access is still the main problem. Not all*

the time can access, and sometimes it's stressful to get the access". Respondents five, six, and seven similarly reported that the connection is either average or quite good, mainly since they reside in town areas. The respondents were asked further where they would turn to if there were such challenges, and all respondents stated that they would turn to the service providers to complain. Apparently, none of the respondents are aware of a platform by JENDELA where users can complain or provide feedback on JENDELA's services and connectivity.

All respondents agreed that poor internet connectivity can lead to operational inefficiencies in their family businesses, affecting day-to-day business activities. This includes affecting the productivity, revenue, and the overall economic contribution of family businesses to the local and regional economy. Furthermore, the restricted availability of online markets, e-commerce platforms, and digital marketing is affecting the ability of family businesses to compete with larger enterprises. Therefore, fixing internet connectivity is essential for several reasons, as it plays a crucial role in societal, economic, and individual development, as well as in the success of businesses. Additionally, it establishes a basis for formulating strategies, regulations, and interventions to address these challenges and foster the growth and sustainability of family businesses in the digital era.

The variation in connectivity experiences between rural and urban respondents underscores persistent digital infrastructure disparities within East Malaysia. While JENDELA aims to bridge this gap, the findings reveal that implementation has yet to achieve consistent outcomes, particularly in remote areas. The reliance on alternative solutions, such as ConnectMe, and the lack of awareness about formal complaint mechanisms suggest limited accessibility to the service itself and user support structures. This highlights a need for more inclusive infrastructure rollouts and better communication between service providers, policymakers, and end-users. Moreover, the clear link respondents make between poor connectivity and reduced

business performance emphasises the urgency of addressing digital inequity as a core component of regional economic development.

Affordability

Examining internet affordability for family businesses involves considering various disciplines such as economics, business management, and information technology. In line with this, accessible internet connectivity enables family businesses to establish and maintain an online presence, facilitating their outreach to a broader audience and allowing them to enter worldwide markets. In essence, through the expansion of market reach, family businesses can broaden their customer base and improve their overall sustainability.

Notably, 50% of the respondents felt that the internet fees are relatively expensive. According to Respondent two, *"It is expensive, especially for the unlimited data, if compared to the service, where the speed in some areas is not stable"*. Respondent 8 expressed, *"The price reductions or offer is only in the manifesto and has never been materialised"*.

Respondent three stated that *"The internet plans here are quite expensive, especially when you need unlimited data for the business. In our area, we don't always get consistent speeds, so we're paying a premium for something that isn't always reliable. We end up using more data than expected just to keep our business running smoothly"*. Respondent seven also lamented that *"Paying for internet is one of our biggest costs. It's tough to manage when prices keep going up, and we rely on the internet for everything"*.

Essentially, the cost-effectiveness of internet services is a crucial factor for family businesses, affecting their capacity to access and utilise online resources effectively. Key factors impacting affordability encompass the price of internet plans, the availability of affordable options from different providers, and the balance between connection speed and cost. Accordingly, family business should thoroughly evaluate their data consumption requirements, explore packaged service alternatives, negotiate

contract terms, and leverage governmental efforts or community collaborations to attain internet solutions that are more economically efficient. In addition, allocating resources towards technology that maximises internet

utilisation and fostering digital literacy among staff can improve productivity and contribute to the overall sustainability of the family business in the digital era.

Table 1: Themes and respondent insights on JENDELA and Internet accessibility for family businesses in Sabah and Sarawak

Theme	Interview Questions	Respondent Dialogue/ Insight	Interpretation/Observation
Awareness of JENDELA and Internet Usage	1. Are you aware of the JENDELA initiative? 2. How do you currently use the internet in your business?	<p>Respondent 1 (Sabah): “I used the internet for work, social media, and my CCTV. I promote my products via Instagram, and orders from customers are from my website”.</p> <p>Respondent 3 (Sabah): “JENDELA? I think I’ve heard the name, but I don’t know what it’s really about or how it helps me”.</p> <p>Respondent 5 (Sarawak): “I use the internet for almost everything. We take orders through WhatsApp and update our promotions on Facebook every day.”</p> <p>Respondent 7: “My children help me with Instagram. I don’t understand it all, but it brings in many young customers. We sell handmade baskets and bags”.</p> <p>Respondent 2: “Even my CCTV runs on internet. If the line goes down, I can’t monitor my shop remotely”.</p>	High internet usage among family businesses shows strong digital dependency. However, only 20% were aware of JENDELA , revealing a disconnect between initiative implementation and community awareness . The need for targeted, local communication strategies is evident. Respondents heavily rely on the internet for sales, promotions, and operations.

Quality of Connectivity	<p>1. How would you describe the quality of your internet connection?</p> <p>2. How does the quality of the internet impact your business?</p> <p>3. What challenges do you face?</p> <p>4. How do you deal with those challenges?</p> <p>5. Are you aware of any platforms like JENDELA that can help?</p>	<p>Respondent 1: “Internet connection is very unstable in certain areas”.</p> <p>Respondent 4: “In rural areas in Sarawak, access is still the main problem. Not all the time can access, and sometimes it’s stressful to get the access”.</p> <p>Respondent 8: “Internet connection in the village is below average; therefore, I had to use ConnectMe”.</p> <p>Respondents 5, 6, 7: Report average to good connections (living in town areas). None were aware that JENDELA had a platform for complaints or feedback.</p>	<p>Strong urban–rural disparity in internet quality. Rural businesses face instability and limited access, leading to reliance on alternatives like ConnectMe. No awareness of JENDELA’s feedback platform indicates a gap in user support communication. Poor connectivity impacts productivity and revenue, reinforcing digital inequity as a key concern for economic development in East Malaysia.</p>
Affordability	<p>How affordable is the internet for your business?</p>	<p>Respondent 2: “It is expensive, especially for the unlimited data, if compared to the service, where the speed in some areas is not stable”.</p> <p>Respondent 3: “The internet plans here are quite expensive, especially when you need unlimited data for the business... We end up using more data than expected just to keep our business running smoothly”.</p> <p>Respondent 7: “Paying for the internet is one of our biggest costs. It’s tough to manage when prices keep going up, and we rely on the internet for everything”.</p> <p>Respondent 8: “The price reductions or offer is only in the manifesto and has never been materialised”.</p>	<p>50% of respondents found internet costs high and inconsistent with service quality, especially in rural areas. Unlimited data plans are a major burden for small businesses. The cost-to-performance imbalance is a barrier to efficient digital adoption. There’s also a distrust of promised cost reductions. This reflects the need for transparent, affordable, and equitable pricing plans to support small business growth.</p>

Family business productivity

The internet can have a profound impact on the sustainability of family businesses, contributing to their growth, efficiency, and adaptability. Thus, leveraging the internet can contribute significantly to the sustainability of family businesses.

Improved business productivity often involves streamlining processes, reducing inefficiencies, and optimising workflows. This, in turn, leads to cost savings as resources are utilised more effectively (Ghosh, A., 2021).

In essence, the internet serves as a transformative tool for family businesses, enhancing their competitiveness, efficiency, and adaptability. By leveraging online resources and technologies, family businesses can weather challenges and position themselves for long-term sustainability in a dynamic and digitally driven business landscape. The above results and findings are best described through the diagram below.

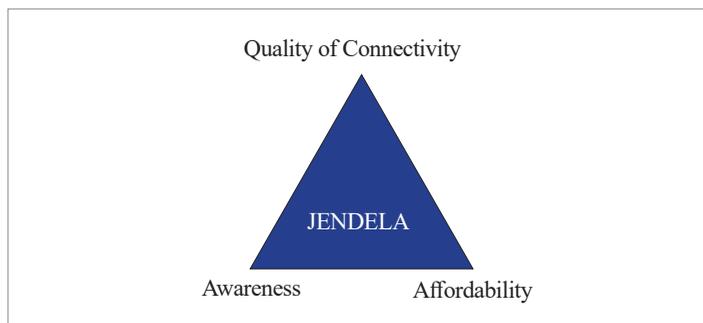


Figure 1: Impact of JENDELA from family business perspectives on business productivity

Ultimately, family businesses’ productivity within the framework of JENDELA hinges on creating awareness within these enterprises regarding the significance of digital connectivity. The process entails making the availability of such connectivity economically accessible and guaranteeing services of superior quality. Academic discussion in this subject would likely examine strategies and processes for implementing these elements, considering the distinct problems and opportunities encountered by family businesses in the changing digital environment. Correspondingly, family businesses can strengthen their ability to withstand challenges, improve their competitiveness, and ensure their long-term viability within the JENDELA framework by focusing on increasing awareness, affordability, and quality of connectivity.

An efficient and reliable digital connectivity system is essential for delivering fast and high-

quality internet access that can be effortlessly accessed from any location at any time. Considering that the internet plays a crucial role in fostering economic development, it is essential to establish a robust, extensive, and high-quality digital infrastructure to support corporate expansion. This, in turn, will contribute to elevating the socio-economic status of the nation. In other words, increase business productivity, achieve cost savings, and drive revenue growth, which in turn will contribute to the sustainability of family businesses.

Conclusions

In conclusion, this study has delved into the impact of the JENDELA initiative on internet accessibility and business productivity within family businesses in Sabah and Sarawak, Malaysia. Through a comprehensive focus group study involving representatives of family businesses in the target regions,

valuable insights have been gathered. These findings provide a crucial resource for making informed decisions and formulating strategies that support the sustainability and success of family businesses. Furthermore, the research underscores the significance of improvements brought about by JENDELA, which contribute to increased business productivity, cost savings, and revenue growth. However, it is essential to acknowledge and address the challenges and disparities identified during the study, particularly those related to affordability and varying infrastructure conditions in rural areas. Note that recognising these challenges is imperative for the effective implementation of policies and initiatives aimed at enhancing digital connectivity. Despite widespread internet usage among participants, only a small fraction was aware of the JENDELA initiative, indicating a critical need for better outreach and education. Connectivity quality also varied significantly, with rural users facing persistent instability that hampers business operations.

Additionally, affordability remains a concern, as many respondents find current pricing disproportionate to the quality of service provided. In addition, this focus group study provides a unique perspective on how JENDELA has impacted family businesses in Sabah and Sarawak. The insights gained from participants shed light on the practical implications of digital infrastructure improvements, offering valuable guidance for policymakers and stakeholders. As the region continues to navigate the digital landscape, understanding the nuanced effects of JENDELA on family businesses is essential for fostering a conducive environment for growth. While this research has provided insights into the multifaceted impacts of the JENDELA implementations on internet accessibility and business productivity amongst family businesses in Sabah and Sarawak, there are notable limitations. These limitations include sampling bias, subjectivity in qualitative analysis, and temporal constraints. To address these limitations, future research should consider more diverse sampling strategies, implement methodological triangulation, and

conduct longitudinal analyses to offer a more comprehensive and objective assessment of the program's impact in Malaysia. Accordingly, this approach will contribute to a deeper understanding of how JENDELA is shaping family business through the digital landscape and offer valuable insights for enhancing the program's success in bridging the digital divide and promoting digital inclusivity in Malaysia. Nevertheless, the research contributes to the academic discourse and the practical domain, offering tangible insights that can shape the trajectory of digital connectivity and support the growth of family businesses in the unique context of Sabah and Sarawak, Malaysia.

Acknowledgements

The authors would like to express their sincere appreciation to the MCMC for the Digital Society Research Grant, referenced as MCMC(RED)700-8/2/11/JLD.4(90). The focus and objectives of the grant provided valuable inspiration and direction for our research in advancing digital society initiatives.

Conflict of Interest Statement

The authors declare that they have no conflict of interest.

References

- Ahmad, A. (2 November 2022). Helping family business to grow. *The Star*.
- Ali, N. Y., Ahmad, Z., & Ghani, R. A. (2020). Do family ownership and ethnicity influence financial choices? Overview of literature on Malaysian corporate landscape. *Asian Journal of Accounting and Finance*, 2(2), 74-84.
- Amran, A., & Ahmad, A. (2010). Family succession and firm performance among Malaysian companies. *International Journal of Business and Social Science*, 1(2), 193-203.
- Bajjal, A., Hoppe, F., Chang, W., Davis, S., & Hoong, F. W. (2022). Through the waves, towards a sea of opportunity. *E-Conomy SEA 2022*.

- Bala, P., & Tan, C. E. (2021). Digital inclusion of the Orang Asli of Peninsular Malaysia: Remote virtual mechanism for usability of telecentres amongst indigenous peoples. *The Electronic Journal of Information Systems in Developing Countries*, 87(4), e12171.
- Bursa Malaysia. (2018). List of Companies in Main and ACE market. Retrieved on 10th July, 2022, from <http://www.bursamalaysia.com/market/listed-companies/list-of-companies/mainmarket/> & <http://www.bursamalaysia.com/market/listed-companies/list-of-companies/ace-market/>
- Bradburn, N. M., Sudman, S., & Wansink, B. (2004). *Asking questions: the definitive guide to questionnaire design--for market research, political polls, and social and health questionnaires*. John Wiley & Sons.
- Bryman, A., & Bell, E. (2007). *Business research methods* (2nd ed.) New York, USA: Oxford University Press.
- Chaffey, D., & Smith, P. R. (2022). *Digital marketing excellence: Planning, optimising and integrating online marketing*. Taylor & Francis.
- Cooper, M., & Schindler. (2010). An organisational learning framework: From intuition to institution. *Academy of Management Review*, 24(3), 522-537.
- Dawayana, C. R., Jrb, S. L. S., Tanakinjal, G. H., Bonifaced, B., & Nasipe, S. (2021). The effects of homestay capabilities on homestay performance in Sabah. *Journal of Responsible Tourism Management*, 2, 72-92.
- George, G., Lakhani, K. R., & Puranam, P. (2020). What has changed? The impact of Covid pandemic on the technology and innovation management research agenda. *Journal of Management Studies*, 57(8), 1754.
- Ghosh, S., Hughes, M., Hughes, P., & Hodgkinson, I. (2021). *Digital entrepreneurship, future of business and finance* (pp. 183-207). https://doi.org/10.1007/978-3-030-53914-6_10
- Gregori, P., & Holzmann, P. (2020). Digital sustainable entrepreneurship: A business model perspective on embedding digital technologies for social and environmental value creation. *Journal of Cleaner Production*, 272, 122817.
- Hay, R. (2021). The impact of advances and challenges of Bush internet connectivity for women in agriculture in Queensland, Australia. In Hamrita, T. (Ed.), *Women in precision agriculture. Women in engineering and science* (pp. 197-212). Cham: Springer. https://doi.org/10.1007/978-3-030-49244-1_10
- Horn, C., & Gifford, S. M. (2022). ICT uptake and use and social connectedness in rural and remote communities: A study from Sarawak, Malaysia. *Information Technology for Development*, 28(4), 721-746.
- Internet Users Survey Report 2020. Retrieved on 21st November, 2023, from <https://www.mcmc.gov.my/skmmgovmy/media/General/pdf/IUS-2020-Report.pdf>
- MCMC-MyConvergence. (2020). The national digital infrastructure plan. Bringing high quality digital connectivity to all Malaysians. Retrieved on 30th November 2023.
- Mihotić, L., Raynard, M., & Sinčić Ćorić, D. (2023). Bouncing forward or bouncing back? How family firms enact resilience in times of crisis. *Journal of Family Business Management*, 13(1), 68-86.
- Nasution, M. D., Rafiki, A., & Pahlufi, C. K. (2021). Development of family business innovation: A case in Indonesia. *Handbook of research on disruptive innovation and digital transformation in Asia*. DOI: 10.4018/978-1-7998-6477-6.ch018
- Ngui, C. Y. K. (2002). Asian family businesses: From riches to rags? *Malaysian Business*, 2, 27.
- Sekaran, U. (2003). *Research methods for business: A skill-building approach* (4th ed.). Southern Illinois: John Wiley & Sons, Inc

- Strusani, D., & Hounghbonon, G. V. (2020). *Accelerating digital connectivity through infrastructure sharing*.
- Yap, C. S., Keling, W., & Ho, P. L. (2023). Determinants of entrepreneurial performance of rural indigenous women entrepreneurs in Sarawak, Malaysia.
- Gender in Management: An International Journal*, 38(3), 337-356.
- Zapata-Cantu, L., Sanguino, R., Barroso, A., & Nicola-Gavrilă, L. (2023). Family business adapting a new digital-based economy: Opportunities and challenges for future research. *Journal of the Knowledge Economy*, 14(1), 408-425.