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SYSTEMATIC POST-TRAINING SUPPORT AND ECONOMIC SELF-RELIANCE AMONG RURAL ENTREPRENEURS: EVIDENCE FROM THE EMPOWERNCER PROGRAMME IN NORTHERN MALAYSIA

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Abstract

Entrepreneurship development programmes are widely implemented to address rural income disparities and promote economic empowerment. However, empirical evidence on the role of systematic post-training support in sustaining entrepreneurial capability remains limited. This study examines how structured post-training support influences economic self-reliance among participants of the empowerNCER Skills Training and Entrepreneurship Development Programme in Northern Peninsular Malaysia. Using secondary administrative data from 1,778 rural participants across Kedah, Perlis, Penang, and Perak, the study adopts a quantitative pre-post evaluation design. Economic self-reliance is measured using a Self-Reliance Index (SRI) constructed from business formalisation, financial literacy (bookkeeping practices), and business digitalisation indicators. Descriptive analysis and the Wilcoxon signed-rank test are used to assess changes in entrepreneurial capability, while an econometric model examines the determinants of improvements in self-reliance. The findings show significant improvements in post-programme self-reliance. Regression results further indicate that business digitalisation, financial literacy (bookkeeping), and formalisation significantly contribute to improvements in economic self-reliance, with digitalisation showing the strongest effect. However, variations in outcomes persist, suggesting that post-training support functions as an enabling condition, while individual capability and contextual factors influence the extent of improvement. This study contributes empirical evidence from a large-scale administrative dataset and underscores the importance of integrating continuous mentoring and monitoring mechanisms to enhance the sustainability of rural entrepreneurship programmes.

Keywords: rural entrepreneurship, post-training support, economic self-reliance, empowerNCER, rural development

INTRODUCTION

Rural entrepreneurship has been widely recognised as a strategic mechanism for addressing structural economic disparities, generating employment opportunities, and enhancing community resilience in developing economies. In many rural settings, entrepreneurship serves not only as a source of income diversification but also as a pathway to strengthen local economic participation (Thukral, M. J., 2025; Baumgartner, D. et al., 2013; Munyo, I. & Veiga, L., 2024) and reduce vulnerability to external economic shocks (Tajuddin & Mulang, 2024; Chen et al., 2022). In Malaysia, despite substantial national progress in poverty reduction and economic development, rural communities in northern states such as Kedah, Perlis, and Perak continue to face persistent development constraints. According to Asadullah, M. N. et al. (2023) and Rajandran, K. et al. (2025), these constraints include limited economic diversification, restricted access to formal market networks, lower levels of business capability, and continued reliance on traditional livelihood activities. Such structural conditions highlight the importance of policy interventions to strengthen entrepreneurial capability and improve sustainable economic outcomes among rural populations (Ortega-Argilés, R., 2022).

In response to these challenges, entrepreneurship development initiatives have increasingly been implemented by government agencies and regional development authorities as part of broader regional development strategies. These initiatives typically focus on improving technical skills, enhancing financial literacy, and facilitating business formalization among low-income communities. One such initiative is the empowerNCER Skills Training and Entrepreneurship Development Programme, which aims to enhance economic participation and entrepreneurial capability among B40 rural communities in Northern Peninsular Malaysia (Northern Corridor Implementation Authority, 2023; Economic Planning Unit, 2021). The programme adopts an integrated intervention approach that combines technical skills training, entrepreneurship modules, and systematic post-training support mechanisms, such as mentoring, monitoring, and resource facilitation. While entrepreneurship training programmes are generally effective in improving entrepreneurial knowledge and technical competencies, the sustainability of economic outcomes often depends on continued institutional support beyond the completion of training. Rural entrepreneurs frequently encounter weak financial management practices, limited digital adoption, and difficulties in sustaining market participation and thus requiring post-training support such as mentoring, monitoring, and continuous institutional assistance to enhance business sustainability and entrepreneurial outcomes (Galvao, A. R. et al., 2020; Shah, S. A. et al., 2016; Baluku, M. M. et al., 2020; Marsal, H. et al., 2024; Bahaw, P. et al., 2026).

This study, therefore, aims to evaluate the role of systematic post-training support in improving economic self-reliance among rural entrepreneurs participating in the empowerNCER programme. Unlike previous studies that primarily focus on entrepreneurial intention, short-term income changes, or static performance indicators, this study examines post-programme economic capability using a multidimensional Self-Reliance Index (SRI) framework (Okon, E. E. et al., 2025; Yusi, S., 2022; Harsono, I. et al., 2023; Radzuan, M. R. et al., 2021). This study contributes to rural entrepreneurship and development literature by providing empirical evidence on the role of post-training ecosystem mechanisms within a real-world policy intervention setting. From a practical perspective, the findings offer policy-relevant insights for improving the design, monitoring, and sustainability of entrepreneurship development programmes targeting rural B40 communities in Northern Peninsular Malaysia.

LITERATURE REVIEW AND HYPOTHESIS FORMULATION

Entrepreneurship is a key driver of economic participation, income diversification, and resilience in rural and disadvantaged contexts. A range of programmes and funding have been implemented by governments to encourage and support the involvement of rural communities in entrepreneurship. These programmes and funding initiatives support local economic performance and inclusive growth through business formation and improved market integration (Baumgartner et al., 2013; Munyo & Veiga, 2024), while also enhancing adaptive capacity in response to economic uncertainty (Thukral, 2025). However, these outcomes differ depending on various factors such as regional disparities, limited economic diversification, and restricted access to formal market systems (Asadullah et al., 2023; Rajandran et al., 2025). These constraints are further reinforced by limited digital adoption and financial capability, which reduce the ability of rural entrepreneurs to sustain business performance and self-reliance (Li & Shahzad, 2025; Tandilino et al., 2025; Au, 2024; Chen et al., 2022).

Addressing these challenges requires a shift towards a comprehensive support ecosystem or targeted policies that extend beyond training. Post-training support mechanisms such as mentoring, monitoring, and continuous institutional facilitation play a critical role in sustaining entrepreneurial outcomes and improving business continuity (Asif et al., 2025; Baluku et al., 2020; Marsal et al., 2024; Bahaw et al., 2026), supporting the proposition that post-training support positively influences economic self-reliance. In addition, entrepreneurial capability reflected in financial literacy, business formalisation, and innovation adoption is closely associated with improved economic self-reliance and long-term sustainability (Okon et al., 2025; Yusi, 2022; Harsono et al., 2023; Radzuan et al., 20210. These relationships provide the basis for examining the contribution of capability components to post-programme outcomes and for formulating hypotheses linking post-training support and entrepreneurial capability to economic self-reliance within a multidimensional Self-Reliance Index (SRI) framework.

RESEARCH METHODS

This study adopts a quantitative research design using secondary administrative data obtained from the empowerNCER Skills Training and Entrepreneurship Development Programme. The dataset consists of 1,778 rural participants from Kedah, Perlis, Penang, and Perak who completed the programme intervention (Table 1).

Table 1. Districts of empowerNCER Skills and Entrepreneurship Development Programme 2019-2021 Implementation.

State	Kedah	Perak	Penang	Perlis
District (s)	1. Pendang 2. Yan 3. Baling 4. Sik 5. Kuala Muda 6. Kota Setar 7. Langkawi	1. Batang Padang 2. Larut, Matang & Selama	Seberang Perai Tengah	Whole Perlis

Source: Unpublished Laporan Keberhasilan Program empowerNCER Latihan Kemahiran dan Keusahawanan, 2021.

The data were collected from programme implementation records and verified monitoring reports that documented participants' entrepreneurial activities and economic outcomes. Economic self-reliance is measured using a Self-Reliance Index (SRI) constructed from three key entrepreneurial capability indicators: business formalisation, financial literacy or bookkeeping practices, and business digitalisation. These indicators capture participants' ability to operate formalised, financially managed, and digitally enabled business activities following programme participation.

Index Categorisation

The Self-Reliance Index (SRI) values are categorised into three levels for interpretation and policy relevance. This categorization enables descriptive and visual assessment of participants' movement across self-reliance levels pre- and post-programme participation:

- Low self-reliance (0.00–0.33),
- Moderate self-reliance (0.34–0.66), and
- High self-reliance (0.67–1.00).

Model specification

To examine determinants of post-programme improvements in economic capability, the following econometric model is estimated:

$$\Delta SRI_i = \beta_0 + \beta_1 Formalisation_i + \beta_2 Bookkeeping_i + \beta_3 Digitalisation_i + \gamma X_i + \varepsilon_i. \quad (1)$$

Where $\Delta SRIi$ represents the change in economic self-reliance for participant i. The explanatory variables include business formalisation, financial literacy (bookkeeping practices), and business digitalisation. The vector X_i captures participants' baseline characteristics, including pre-programme self-reliance and pre-programme (baseline) income levels, which control for individual heterogeneity. The error term ε_i represents unobserved influences affecting post-programme economic outcomes. The regression model is estimated using Ordinary Least Squares (OLS) to assess the association between programme components; formalization, bookkeeping and digitalisation and changes in economic self-reliance (Wooldridge, 2016). Table 2 summarises the expected relationships between the explanatory variables and changes in economic self-reliance, based on theoretical and empirical literature.

Table 2. Relationship between dependent ($\Delta SRIi$) and explanatory variables

Variable	Expected Sign	Supporting References
Formalisation	(+)	Yusi (2022); Harsono et al. (2023)
Bookkeeping	(+)	Okon et al. (2025)
Digitalisation	(+)	Harsono et al. (2023)
Pre-programme SRI	(-)	Wooldridge (2016); Khandker et al. (2010)
Baseline Income	(+)	Wooldridge (2016)

Source: Entrepreneurship as A Catalyst For Economic Empowerment Of Rural Communities In Northern Peninsular Malaysia, 2026

Formalisation, bookkeeping, digitalisation, and baseline income are all expected to positively influence economic self-reliance, as they improve access to resources, enhance financial management and efficiency, expand market opportunities, and strengthen individuals' capacity for economic growth. However, pre-programme SRI is expected to negatively influence economic self-reliance, reflecting diminishing returns and convergence effects, where individuals with lower initial capability tend to experience larger improvements following programme participation (Wooldridge, 2016; Khandker et al., 2010).

Research framework

Figure 1 presents the research framework illustrating how programme intervention contributes to economic outcomes among rural participants in Northern Peninsular Malaysia by distinguishing between training and systematic post-training support.

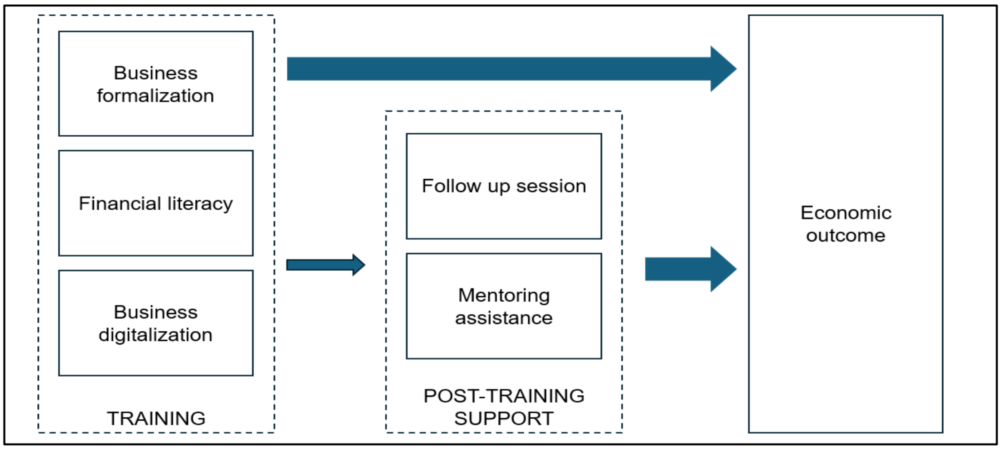

Figure 1. Research Framework

Source: Entrepreneurship as A Catalyst For Economic Empowerment Of Rural Communities In Northern Peninsular Malaysia, 2026, adapted from Becker (1964); Asif et al. (2025); Baluku et al. (2020); and Okon et al. (2025).

As shown in Figure 1, the training component consists of three dimensions, namely business formalization, financial literacy, and business digitalization, which are grounded in Human Capital Theory (Becker, 1964) as they enhance entrepreneurial knowledge, skills, and capabilities through upskilling and reskilling.

Business formalisation enables participants to operate within the formal economy and access markets, financial institutions, and government support, while financial literacy improves record-keeping and financial decision-making. Business digitalisation encourages the adoption of technology to expand market reach. Complementing these elements, post-training support—such as mentoring and follow-up sessions—reinforces programme outcomes by addressing implementation challenges, strengthening capability application, and supporting improvements in long-term economic self-reliance.

RESULTS AND DISCUSSION

Table 3 provides the descriptive statistics of the Self-Reliance Index (SRI) before and after participants underwent the empowerNCER Skills Training and Entrepreneurship Programme.

Table 3. Descriptive Statistics of PRE-SRI and POST-SRI

Variable	Mean	Std. Dev.	Min	Max
PRE-SRI	0.0369	0.0887	0	0.4018
POST-SRI	0.6604	0.1512	0.2	1

Source: Entrepreneurship as A Catalyst For Economic Empowerment Of Rural Communities In Northern Peninsular Malaysia, 2026

Results indicate substantial improvements in participants' economic self-reliance following programme participation. The mean Self-Reliance Index increased significantly from 0.0369 prior to programme participation to 0.6604 post-programme, suggesting strong improvements in entrepreneurial capability and a transition towards more sustainable business practices.

Table 4. Determinants of Post-Programme Economic Self-Reliance ($\Delta SRIi$)

Variable	Coeficient (β)	Robust Std. Error	t-statistic	p-value
Constant	−0.032368	0.004861	−6.66	0.000
Business Formalisation	0.093347	0.006982	13.37	0.000
Financial Literacy / Bookkeeping	0.156606	0.005111	30.64	0.000
Business Digitalisation	0.181944	0.004905	37.09	0.000
Pre-Programme Self-Reliance	−0.687841	0.022567	−30.48	0.000
Pre-Programme Income	0.000001	0.000003	0.33	0.739

Source: Entrepreneurship as A Catalyst For Economic Empowerment Of Rural Communities In Northern Peninsular Malaysia, 2026

As shown in Table 4, business formalisation is positively and significantly associated with economic self-reliance, as it enhances trust in the business, expands market access, strengthens customer relationships, and improves access to financial and institutional support (Yusi, 2022; World Bank, 2019). Meanwhile, bookkeeping practices show a strong and statistically significant positive effect on ΔSRI_i (β = 0.157, $p < 0.001$), indicating that participants who maintain proper financial records experience greater improvements in economic self-reliance, consistent with evidence that proper financial management enhances business performance and sustainability (Okon et al., 2025; OECD, 2020).

Business digitalisation is also positively and significantly associated with ΔSRI_i (β = 0.182, $p < 0.001$), suggesting that the adoption of digital marketing enhances market reach and operational efficiency, thus improving economic capability (Harsono et al., 2023; UNCTAD, 2021). Pre-programme self-reliance is negatively and significantly associated with ΔSRI_i (β = −0.687841, p < 0.001), indicating that participants with lower initial capability tend to experience larger improvements, reflecting diminishing marginal returns to programme participation (Wooldridge, 2016).

In contrast, pre-programme income is not statistically significant (p > 0.10), suggesting that improvements in self-reliance are driven more by engagement with programme components and capability development rather than initial income levels alone (World Bank, 2019).

CONCLUSION

This study provides empirical evidence on the role of systematic post-training support in strengthening economic self-reliance among rural entrepreneurs participating in the empowerNCER programme. The findings indicate that integrated programme interventions that combine skills training with structured follow-up support mechanisms contribute to measurable improvements in entrepreneurial capability and economic outcomes. From a policy perspective, strengthening post-training ecosystem mechanisms—such as mentoring continuity, monitoring processes, and resource facilitation—is essential to enhance the sustainability and effectiveness of rural entrepreneurship initiatives. Importantly, the findings suggest that post-training support functions as an enabling condition that reinforces capability development, while the extent of improvement is shaped by individual capability and contextual factors.

These findings highlight the importance of designing entrepreneurship development programmes that extend beyond training delivery to reinforce long-term capabilities. Nevertheless, this study has several limitations. The analysis relies on secondary administrative programme data, which limits the ability to capture behavioural factors and entrepreneurial decision-making processes. In addition, the pre-post evaluation framework does not fully establish causal relationships between programme interventions and economic outcomes.

Future research may incorporate longitudinal datasets and mixed-method approaches to better understand long-term entrepreneurial resilience and the dynamic interaction between institutional support mechanisms and individual capability development in rural economic transformation.

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