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PSYCHOLOGICAL AND TECHNOLOGICAL DRIVERS OF RURAL ACTORS' BEHAVIOURS: EXPERT INSIGHTS FOR RURAL TRANSFORMATION

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Abstract:

Unexpectedly, psychological and technological behavioural dimensions exhibit statistically significant inverse relationships with progress in rural transformation, despite the widespread assumption that rural actors' behaviours are critical drivers of development. These findings challenge prevailing assumptions that enhanced behavioural capacities consistently lead to positive transformation outcomes in rural contexts. Guided by the Transformational Rural Actors' Behavioural (TRAB) conceptual framework, developed by Samsudin et al. (2024), which conceptualises rural transformation as a function of behavioural, psychological and technological capabilities embedded within socio-cultural and structural contexts, and drawing on insights from Organisational Citizenship Behaviour (OCB), the Theory of Planned Behaviour (TPB), the Theory of Interpersonal Behaviour (TIB), and the Citizen-Centric Smart Cities (CCSC) framework, this study examines the qualitative explanatory phase of a larger mixed-methods approach to unpack these counterintuitive findings identified through Partial Least Squares Structural Equation Modeling (PLS-SEM) structural modelling. Semi-structured interviews were conducted with elite

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informants, each with extensive rural development experience (minimum 5 years, most over 10 years), purposively selected to provide in-depth explanatory insights into the quantitative findings. The findings reveal that psychological attributes, particularly coping strategies, decision-making processes, and mental health well-being, emerge as the most salient manifestations of the observed adverse effects in rural transformation. Specifically, expert insights indicate that these weaknesses arise from broader contextual mechanisms, including knowledge and awareness gaps, dependency-oriented mindsets, generational disparities, and culturally embedded lifestyle practices. Within the technological dimension, low digital literacy, limited e-commerce adoption, weak Information and Communication Technology (ICT) utilisation, and low mobile banking uptake emerge as key technological constraints. Moreover, these technological constraints are amplified by infrastructural deficits, affordability barriers, and uneven digital exposure, restricting the effective translation of technological access into transformative outcomes. Experts further emphasised that psychological readiness and technological capability are interconnected; misalignment between the two reduces the effectiveness of rural development initiatives. The findings suggest conditional and context-dependent behavioural effects rather than uniformly positive influences. The study advances rural transformation theory by demonstrating that behavioural drivers may become counterproductive when psychological readiness and technological capability are misaligned within structurally constrained environments.

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Qualitative Expert Insights, Psychological, Rural Transformation, Technological, Transformational Rural Actors' Behaviours



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Introduction

Rural transformation is a complex process that extends beyond physical infrastructure and financial investments, requiring sustained engagement with the behavioural capacities of rural actors. This is part of the human capital and resource development. Globally and also in Malaysia, rural development agendas have gradually shifted from infrastructure-led interventions towards more holistic approaches that emphasise human capital, local leadership, and community-driven rural change (Md Sharif & Tuan Lonik, 2017; Organisation for Economic Co-operation and Development (OECD), 2018). Therefore, rural actors, including individuals, community leaders, cooperatives, entrepreneurs, and local organisations, play a central role in shaping rural development initiatives through their interpretation, adoption, and sustained implementation within rural contexts (Wang et al., 2017). As such, rural actors'

behavioural readiness increasingly determines whether rural transformation efforts lead to sustainable socio-economic and environmental outcomes.

Despite significant national policy efforts, the rural–urban divide in Malaysia remains pronounced, as reflected in persistent income disparities, uneven infrastructure development, limited competitiveness in the labour market, and continued out-migration of youth (Liu & Li, 2017; Rashid et al., 2021; Rashid et al., 2016; Ridzuan, 2023). Due to the pressure of urbanisation, many rural communities continue to experience economic stagnation and population decline (Economic Planning Unit, Malaysia, 2015; World Bank Group, 2025). Structural limitations, including inadequate digital connectivity, limited integration into high-value markets, and continued reliance on government support, further erode rural resilience and competitiveness (Ahmad, 2023; Kavan, 2022). In response, the Ministry of Rural and Regional Development (*KKDW*) has increasingly shifted its policy focus from direct financial assistance to community empowerment, innovation, and behavioural change as key strategies for rural development.

The intended shift can be observed in the recent rural development initiatives, such as the *Program Desa Lestari* (PDL) and the *Anugerah Aspirasi Desa MADANI* (ADM), which promote bottom-up participation, local leadership empowerment, and innovation aligned with smart village principles (Asri, 2022; Dalton et al., 2011; Ministry of Rural and Regional Development, 2024). These programmes signal a growing recognition that rural transformation depends not only on economic inputs but also on the willingness, motivation, and capabilities of rural actors to initiate and drive change. Nevertheless, empirical evidence indicates that many rural communities continue to exhibit dependency-oriented mindsets, limited efforts, and weak self-governing capacity, thereby constraining the long-term effectiveness of such intervention programmes (Ma et al., 2020; Ministry of Rural and Regional Development, 2019; Rashid et al., 2023). International rural development literature increasingly positions behavioural transformation as a core driver of rural change, particularly through psychological and technological dimensions that influence innovation, adaptability, and sustainability (Li et al., 2019; OECD, 2018). Among the OECD’s ten drivers of rural transformation, “shifting values” underscores the importance of evolving aspirations, attitudes, and mindsets in shaping how rural populations respond to opportunities associated with digitalisation, education, and technological innovation. These processes require psychological readiness, a willingness to change, and confidence in adopting new practices. However, within the Malaysian context, behavioural dimensions, especially psychological and technological factors, remain conceptually fragmented and insufficiently integrated into dominant rural transformation frameworks and policy designs (Rashid et al., 2024).

Empirical studies further suggest that continued out-migration of youth and skilled individuals weakens local leadership and innovation capacity, reinforcing cycles of stagnation and dependency (Dalton et al., 2011; Gladek et al., 2017). Behavioural and value-based factors are central to this dynamic, as communities characterised by low aspirations, limited self-efficacy, and increased risk aversion tend to show weaker engagement in transformative activities (Kosec & Mo, 2017; Ma et al., 2020). Conversely, psychological attributes, such as adaptability, risk tolerance, and confidence, are associated with stronger participation in entrepreneurship and innovation. Similarly, technological behaviours, particularly digital literacy, access to technology, and trust in technology, shape the extent to which rural actors can benefit from smart agriculture, digital platforms, and modern value chains (Ahmad, 2023; Ridzuan, 2023). However, these two dimensions have received relatively little attention or

remain underexamined in behavioural-related research and practices compared to the economic and social behavioural dimensions, particularly income-generation and participatory development programmes (Economic Planning Unit, Malaysia, 2021; Ministry of Rural and Regional Development, 2019). In response to this gap, this study adopts the qualitative explanatory phase of a larger mixed-methods approach to explain the underlying significant negative relationships between psychological and technological drivers and rural transformation.

Transformational Rural Actors' Behavioural (TRAB) Conceptual Framework

The TRAB conceptual framework by Samsudin et al. (2024) is constructed through a Systematic Literature Review (SLR) to identify and synthesise the core behavioural dimensions underpinning rural transformation, followed by an extended review of prior empirical and theoretical studies to operationalise and refine the corresponding behavioural indicators. As such, it provides a comprehensive understanding of how rural actors' behaviours holistically and sustainably influence rural transformation (Figure 1). Within the framework, transformational behaviours of rural actors are treated as independent variables, represented by five key behavioural dimensions: Economic (9 indicators), Social (9 indicators), Environmental (8 indicators), Psychological (8 indicators), and Technological (7 indicators). Collectively, these five dimensions comprise 41 indicators capturing the capacities and actions of rural actors across diverse domains. Each dimension encompasses critical behavioural components such as agricultural productivity, environmental stewardship, psychological well-being, social networking, and technology adoption, which together enhance rural actors' ability to respond, adapt, and drive transformative change within their communities. These dimensions collectively define TRAB as a central behavioural construct that shapes the dynamics of rural transformation.

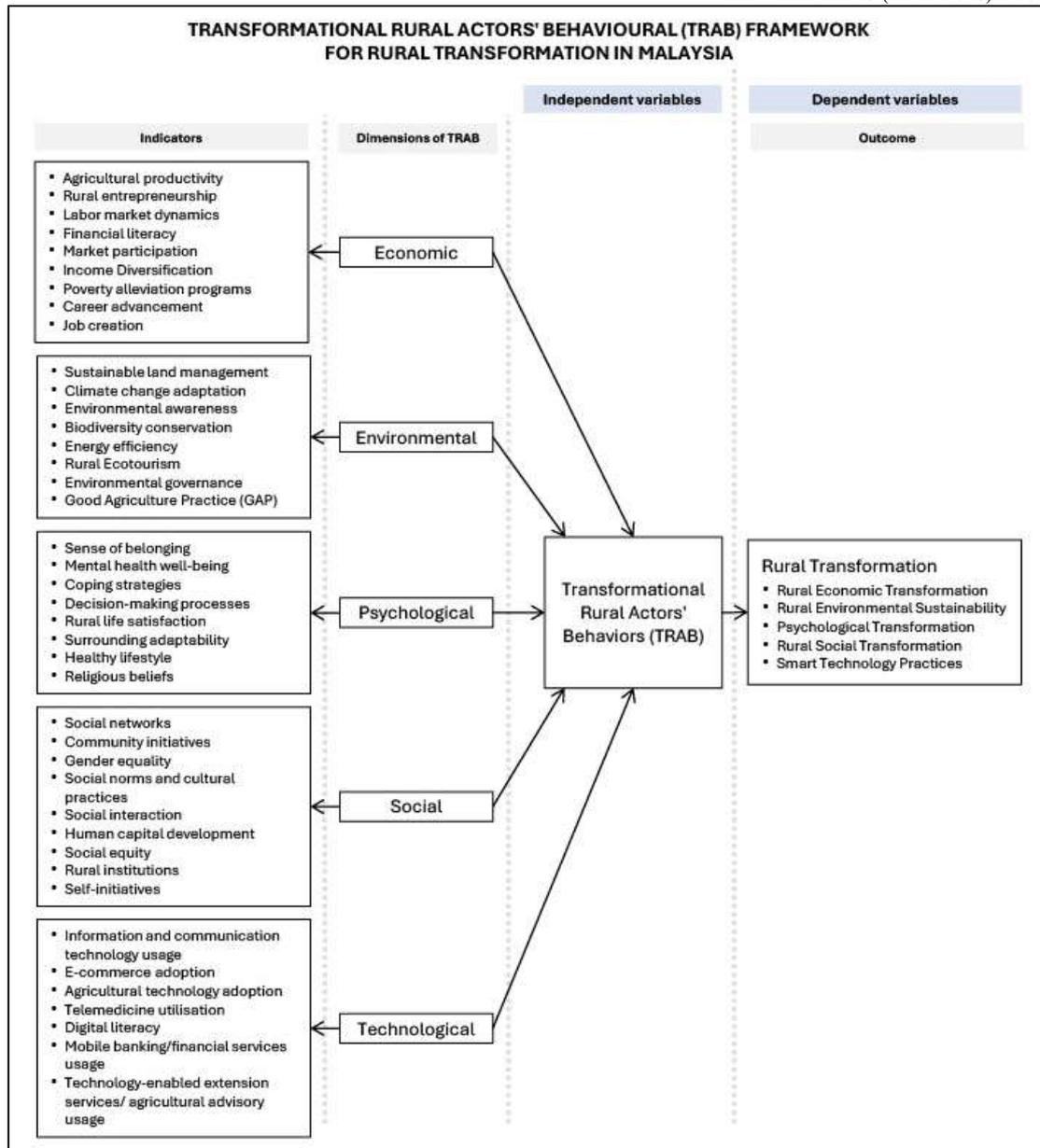


Figure 1: A Conceptual Framework of TRAB for Rural Transformation

Source: Samsudin et al. (2024)

TRAB subsequently exerts a direct effect on the dependent variable, namely rural transformation, which is measured by five key outcomes: rural economic transformation, rural environmental sustainability, psychological transformation, rural social transformation, and smart technology practices. Overall, the TRAB framework provides a comprehensive structural representation of how behavioural dimensions and indicators lead to transformative outcomes, thereby offering an empirical basis for understanding rural actors' contributions to the transformation of rural ecosystems and communities in Malaysia.

Out of five dimensions, this study aims to provide qualitative explanatory insights into how the psychological and technological attributes, such as mindset, aspirations, adaptability, digital readiness, and access to technology, shape rural actors' engagement in transformation processes. Prior literature underscores the importance of psychological attributes and

contextual value orientations in rural development, where belief systems, community norms, and cognitive readiness influence decision-making, risk perception, and collective action in transformation contexts (Belanche et al., 2021). Moreover, psychological attributes shaped by religious and ethical values, such as honesty and trustworthiness, underpin rural actors' commitment and active participation in transformation initiatives, reflecting the moral and cultural foundations of rural societies (Sarchami et al., 2020). In parallel, the adoption of digital technologies has been widely recognised as a key driver of rural transformation, enhancing connectivity, economic participation, and access to broader markets (Fahmi & Mendrofa, 2023). Nonetheless, the realisation of these potentials is conditional on adequate digital literacy, infrastructure, and behavioural readiness factors that mediate how technology translates into meaningful socio-economic change (Firzana et al., 2023). By elucidating the mechanisms underlying these behavioural dimensions, particularly when they act as latent constraints or conditional enablers, the study provides context-sensitive knowledge to inform strategies for strengthening rural transformation and enhancing the sustainability and effectiveness of rural development initiatives in Malaysia.

Methodology

This study employs a qualitative explanatory method within a mixed-methods approach to clarify the significant negative relationships between psychological (PS) and technological (TE) drivers and rural transformation outcomes. The study draws on the TRAB Framework, by Samsudin et al. (2024), which primarily focuses on psychological (8 indicators) and technological (7 indicators). Refer to Table 1, the quantitative results from PLS-SEM revealed that economic ($\beta = 0.362$, $p = 0.000$), environmental ($\beta = 0.249$, $p = 0.006$), and social ($\beta = 0.274$, $p = 0.001$) factors positively influence rural transformation. However, psychological ($\beta = -0.125$, $p = 0.006$) and technological ($\beta = -0.155$, $p = 0.000$) factors negatively influence rural transformation. Overall, the results highlight the dual nature of rural transformation, where favourable economic, environmental, and social conditions facilitate progress. On the other hand, psychological and technological factors play a different role.

Table 1: Structural Model Path Coefficients and Hypothesis Testing Results (PLS-SEM)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	Interpretation
EC -> RT	0.362	0.356	0.099	3.656	0.000	Significant positive effect
EN -> RT	0.249	0.257	0.089	2.787	0.006	Significant positive effect
PS-> RT	-0.125	-0.119	0.045	2.758	0.006	Significant negative effect
SO -> RT	0.274	0.270	0.082	3.327	0.001	Significant positive effect
TE -> RT	-0.155	-0.152	0.043	3.584	0.000	Significant negative effect

Source: Authors (2025)

This targeted focus in the current paper enables a deeper exploration of the factors that affect psychological and technological drivers, which have relatively low influence on rural mechanisms that may constrain rural actors' engagement with transformative initiatives and rural transformation outcomes.

A purposive sampling approach was employed to select participants. Therefore, about five experts with more than five years of professional experience in rural development, including policymakers, policy implementers responsible for rural programmes, and experienced rural entrepreneurs implementing transformative practices in their communities. Specifically, Expert 1 (E1) is a Town and Rural Planning Officer at *Lembaga Kemajuan Kelantan Selatan* (KESEDAR) with 21 years of experience in rural socioeconomics, offering insights from a regional development planning and implementation perspective. Expert 2 (E2) is a Senior Lecturer at *Universiti Teknologi Malaysia* with 16 years of academic experience, specialising in community participation in planning and resilient rural community studies, offering a scholarly and analytical perspective on behavioural and social dynamics. Furthermore, Expert 3 (E3) serves as the Secretary of the Rural Community Division at the Ministry of Rural and Regional Development, with 24 years of experience in community development policies and programmes, providing policy-level insights into national rural initiatives. Expert 4 (E4) is the Managing Director of D'Impian Agro Farm with 9 years of entrepreneurial experience, representing the perspective of rural economic actors directly involved in generating local economic contributions. Finally, Expert 5 (E5) is an Urban Planning and Project Development Manager at *Lembaga Kemajuan Johor Tenggara* (KEJORA), with 23 years of experience in rural transformation planning and the implementation of development projects within the KEJORA region.

Semi-structured interviews were conducted to gather in-depth information on psychological and technological dimensions of rural actors' behaviours. Notably, the interview protocol, informed by the TRAB framework and the negative findings from the PLS-SEM analysis, explored aspects such as mindset, risk perception, adaptability, identity formation, digital readiness, technology access, and confidence in technology adoption. Interviews were conducted via videoconferencing (Google Meet) and lasted 20-30 minutes each. All interviews were audio-recorded with participants' consent and transcribed verbatim, with confidentiality and anonymity maintained throughout the research process. Subsequently, data were analysed using thematic analysis to identify recurring patterns and underlying mechanisms that explain negative behavioural effects (Braun & Clarke, 2021). The transcripts were read repeatedly to achieve data familiarisation, after which initial coding focused on psychological and technological dimensions. The resulting codes were then systematically grouped into themes representing constraints, enablers, and interactions influencing rural transformation. Themes were cross validated across participants to identify areas of consensus and divergence, and preliminary interpretations were shared with selected participants for member checking. To enhance trustworthiness, this study maintained reflective memos and an audit trail documenting coding and theme development, and triangulated findings with quantitative PLS-SEM results. In addition, ethical approval for the study was obtained from *Universiti Teknologi MARA* (UiTM), and informed consent was obtained from all participants prior to data collection. All data were securely stored in accordance with institutional guidelines.

Results and Discussions

The qualitative analysis of expert interviews provides an explanatory account of the significant negative relationships between the PS and TE behavioural dimensions and rural transformation, as identified in the PLS-SEM analysis. In short, the psychological ($\beta = -0.125$, $p = 0.006$) and technological ($\beta = -0.155$, $p = 0.000$) factors negatively influence rural transformation. Therefore, the clarification of these negative relationships, based on the qualitative insights, is illustrated in Figure 2. The thematic analysis reveals a set of intervening contextual mechanisms, namely knowledge and awareness gaps, dependency-oriented mindsets, generational and demographic differences, digital infrastructural and connectivity constraints, and culturally embedded lifestyle practices that condition how these behavioural dimensions operate in practice. Rather than indicating resistance to rural transformation, these findings suggest a misalignment among behavioural capacities, policy assumptions, and contextual readiness that constrains the effective translation of psychological and technological behaviours into transformative outcomes.

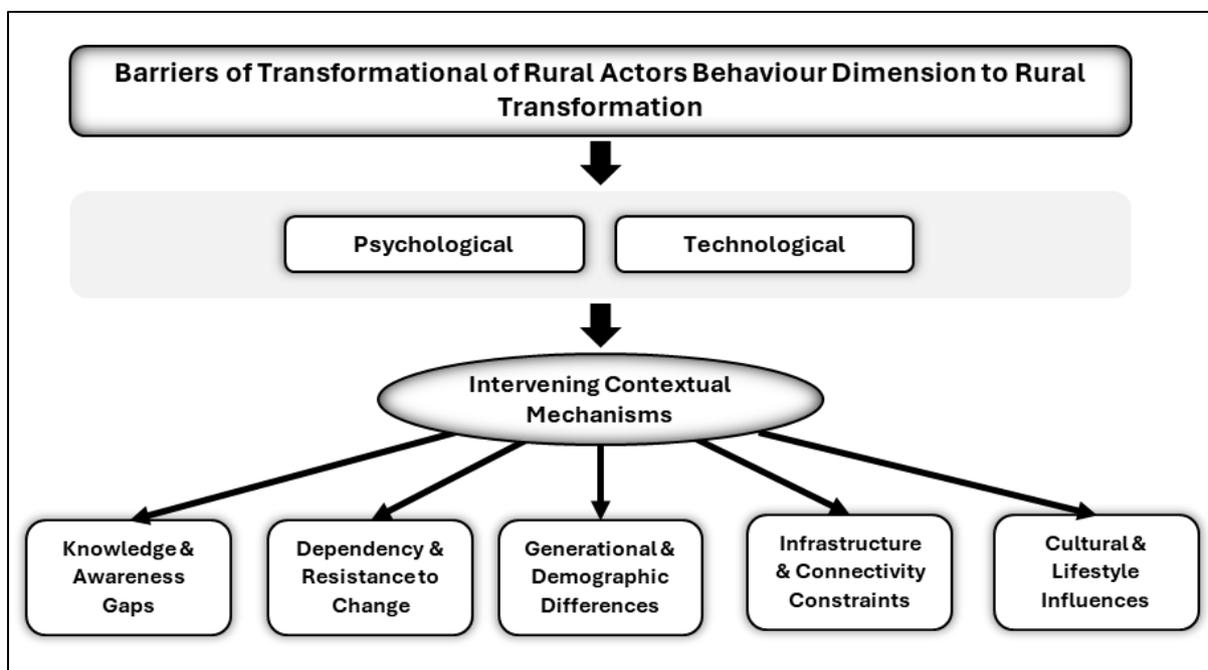


Figure 2: Thematic Analysis of Expert-Identified Mechanisms Explaining the Negative Psychological and Technological Behavioural Effects on Rural Transformation

Source: Authors (2025)

Knowledge and Awareness Gaps

Thematic analysis identifies knowledge and awareness gaps as a primary mechanism explaining the negative relationships between PS and TE behavioural dimensions and rural transformation. Four experts agreed that although access to services and digital technology has improved, limited comprehension, critical awareness, and effective utilisation persist among rural actors. They noted that rural communities often lack a clear understanding of development objectives and the functional role of psychology and technology in transformation processes. This cognitive disconnect weakens psychological engagement, fosters passive attitudes, and results in superficial use of technology (Mohd Nasir et al., 2024). Despite widespread smartphone and internet access, low digital literacy and limited information discernment constrain behavioural adaptation and reduce transformative impact. The overall synthesis

confirms that insufficient knowledge and awareness prevent psychological readiness and technological adoption from translating into meaningful transformation outcomes. Thus, the negative PS and TE effects do not reflect inherent limitations of these dimensions, but rather the failure to activate behavioural potential under conditions of cognitive and informational constraint.

Dependency and Resistance to Change

Thematic analysis reveals that dependency-oriented mindsets and resistance to change serve as key psychological mechanisms that constrain rural transformation. Three experts observed that many rural actors experience high levels of psychological comfort and perceived sufficiency in their existing livelihoods, which reduces their motivation to pursue change or innovation. They highlighted that satisfaction with land ownership, family support, stable routines, and low financial pressure cultivates behavioural inertia. This sense of adequacy diminishes aspiration, risk-taking, and openness to new technologies, causing psychological attributes to operate as barriers rather than enablers of transformation (Ham, 2023). As a result, technological initiatives are often perceived as unnecessary, thereby perpetuating reliance on traditional practices, including conventional marketing channels and non-digital agricultural methods. While one expert suggested that resistance may stem more from limited purpose and unclear developmental goals than dependency itself, and another observed variation across individuals, the overall synthesis indicates that psychological comfort and habitual reliance on established practices weaken the drive for transformation. Consequently, the negative relationships between PS and TE behavioural dimensions and rural transformation reflect not opposition to development, but a lack of internal pressure and incentive to change under conditions of perceived sufficiency and behavioural inertia.

Generational and Demographic Differences

Thematic analysis identifies generational and demographic differences as a critical mechanism explaining the negative relationships between PS and TE behavioural dimensions and rural transformation. All experts acknowledged that age structure, youth out-migration, and generational attitudes (age cohorts) significantly shape rural actors' openness to change and capacity for technology adoption. Experts consistently observed that older rural residents tend to be psychologically comfortable, risk-averse, and attached to established livelihoods, which limits their motivation to engage with innovation. In contrast, younger generations exhibit greater adaptability, curiosity, and digital readiness. However, widespread youth out-migration reduces the presence of these transformative agents within rural communities, leaving behind populations with lower digital literacy and weaker innovation capacity (Gómez-Ullate et al., 2020).

This demographic imbalance dilutes the collective effectiveness of psychological readiness and technological initiatives. While isolated groups of younger or more educated individuals may actively engage with new technologies, rural communities dominated by older populations exhibit fragmented, inconsistent behavioural responses. Consequently, the negative PS and TE relationships reflect aggregated behavioural tension arising from intergenerational divergence rather than a lack of transformative potential. Overall, the findings suggest that rural transformation is constrained not by the absence of adaptive psychological or technological traits, but by demographic realities that concentrate innovation capacity among groups that are increasingly absent from rural settings. This generational mismatch limits the diffusion of

technology and weakens the translation of behavioural readiness into sustained transformation outcomes.

Digital Infrastructure and Connectivity Constraints

Thematic analysis indicates that inadequate physical and digital infrastructure constitutes a key structural constraint weakening both technological engagement and psychological readiness for change in rural areas. Although rural residents generally display openness toward technology, poor internet coverage, limited connectivity, and financial constraints hinder translating positive attitudes into actual behavioural change, resulting in weak or negative transformation outcomes. Four experts highlighted that technological disengagement in rural contexts is driven more by infrastructural limitations than resistance. Limited connectivity, reliance on shared access points, and uneven coverage reduce regular technology use and lower confidence in digital solutions (Firzana et al., 2023). Consequently, technology is often confined to basic or recreational functions rather than productive or developmental applications.

In addition, affordability and cost–benefit considerations further constrain adoption. For many rural households and smallholders, investment in advanced technologies is perceived as economically unjustifiable, reinforcing selective and superficial use patterns. These structural and economic barriers collectively suppress both motivation and sustained engagement with technology. Overall, the findings suggest that psychological readiness alone is insufficient to drive rural transformation when digital infrastructural and connectivity gaps persist. These constraints act as a structural bottleneck, weakening the effectiveness of technological initiatives and explaining the negative relationship between the psychological and technological dimensions and rural transformation in the rural Malaysian context.

Cultural and Lifestyle Influences

Thematic analysis indicates that cultural norms, communal identity, and lifestyle satisfaction serve as contextual mechanisms that influence the negative relationships between the PS and TE behavioural dimensions and rural transformation. All experts highlighted that entrenched cultural values, adherence to social hierarchies, and collective lifestyle orientations often limit openness to innovation and to the adoption of technology. Rural residents frequently prioritise traditional practices, communal harmony, and satisfaction with existing livelihoods (Santoro, 2024), which constrain psychological motivation and reduce proactive engagement with technological tools. Additionally, occupational patterns tied to agriculture and informal networks limit exposure to digital platforms. In contrast, communal decision-making norms reduce individual agency, thereby weakening the salience of psychological constructs grounded in autonomy or self-directed change (Liu et al., 2024). Experts also noted that cultural heterogeneity across rural subgroups necessitates context-sensitive approaches; standardised technological initiatives may fail to align with local values, producing psychological resistance or minimal adoption. Overall, cultural and lifestyle factors serve as mediating forces that preserve social cohesion; nonetheless, they also limit behavioural adaptation and technological diffusion. The experts' insights help explain why PS and TE exhibit a significant negative relationship with rural transformation: the transformative potential of psychological readiness and technological engagement is constrained when cultural and lifestyle anchors outweigh incentives for change.

Overall, Table 2 summarises the comparative perspectives of the five experts across key thematic areas.

Table 2: Comparative Analysis of Expert Views on Negative Relationships (PS and TE)

Themes	Experts				
	E1	E2	E3	E4	E5
Knowledge and Awareness Gaps	/	/	/	/	-
Dependency and Resistance to Change	/	/	/	-	-
Generational and Demographic Differences	/	/	/	/	/
Infrastructure and Connectivity Constraints	/	/	/	-	/
Cultural and Lifestyle Influences	/	/	/	/	/

Source: Authors (2025)

In summary, these qualitative findings indicate that the negative PS and TE coefficients observed in PLS-SEM are not contradictions but rather mechanistic reflections of contextual realities. For psychological behaviours, negative effects stem from dependency mindsets, intergenerational differences, and knowledge gaps. In contrast, for technological behaviours, negative outcomes are rooted in infrastructural, internet connectivity, affordability, and capability limitations. Across all experts, cultural and lifestyle influences further condition how both psychological readiness and technological engagement are enacted in rural communities. All experts' insights collectively suggest an interdependent relationship between the psychological and technological dimensions, in which psychological readiness conditions technology adoption. In contrast, technological limitations may, in turn, constrain psychological engagement. These insights indicate that negative relationships in quantitative models should not be interpreted as failures, but as indicators of policy-behaviour misalignment. Understanding these mechanisms allows policymakers and practitioners to design context-sensitive interventions that address both psychological and technological constraints, thereby enhancing the effectiveness and sustainability of rural transformation initiatives.

Conclusions

This study advances rural transformation literature by integrating behavioural dimensions with contextual realities in rural Malaysia. Expert-based thematic analysis provides critical explanatory depth, demonstrating that the negative relationships identified from the quantitative results are not indicative of resistance to transformation, but rather reflect structural, cultural, and behavioural misalignments. Five interrelated themes of knowledge and awareness gaps, dependency-oriented mindsets, generational and demographic divides, infrastructural and connectivity constraints, and cultural and lifestyle influences collectively constrain the translation of psychological readiness and technological exposure into meaningful, transformative outcomes. The results highlight that rural transformation is not solely a function of individual or technological availability. Instead, it is shaped by collective norms, demographic realities, and enabling environments that condition behavioural change. Psychological constructs premised on autonomy and self-directed motivation may have limited explanatory power in communal rural contexts. In contrast, technological initiatives remain ineffective when digital infrastructure is insufficient, unaffordable, or lacking local capability.

Theoretically, this study contributes to the rural transformation literature by demonstrating that behavioural dimensions can exert context-dependent and even inverse effects when institutional assumptions overlook socio-cultural realities. Methodologically, integrating PLS-SEM with thematic analysis strengthens explanatory validity by uncovering the mechanisms underlying unexpected quantitative relationships. Practically, the findings underscore the need for context-sensitive, culturally adaptive, and infrastructure-first strategies, alongside youth-centred and community-mediated interventions, to realign psychological and technological initiatives with rural capacities and aspirations. In conclusion, rural transformation in Malaysia requires more than behavioural encouragement or technological provision. Sustainable rural change depends on aligning psychological change and technological innovation with local cultures, demographic structures, and readiness for structural change, ensuring that transformation efforts resonate with rural lived realities and their desired interest.

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Conflict of Interest Statement: The authors declare that there is no conflict of interest regarding the publication of this paper. All authors have contributed to this work and approved the final version of the manuscript for submission to the Journal of Tourism, Hospitality and Environment Management (JTHER).

Ethics Statement: This study was conducted in accordance with ethical research standards. All procedures involving human participants were reviewed and approved by the UiTM Research Ethics Committee, approval number REC/06/2024 (PG/MR/239). Informed consent was obtained from all participants prior to data collection. Participation was voluntary, and respondents were assured of confidentiality and anonymity. The data collected were used solely for academic purposes.

Author Contribution Statement: All authors contributed significantly to the development of this manuscript. All authors read and approved the final version of the manuscript prior to submission.

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