International Journal of Entrepreneurship and Management Practices
IJEMP
EISSN : 2600-8750
Volume 9 Issue 35 (September 2026) PP. 775-814



INTERNATIONAL JOURNAL OF ENTREPRENEURSHIP AND MANAGEMENT PRACTICES (IJEMP)
www.gaexcellence.com/ijemp

PERCEIVED MACROECONOMIC DEPENDENCY AND BUSINESS WELLBEING AMONG SMALL AND MEDIUM ENTERPRISES IN TERENGGANU

Mohd Ariff Kamaludin[1], Mohamad Shukri Johari[2]*, Irwan Ibrahim[3], Zaimy Johana Johan[4], Norina Ahmad Jamil[5], Norhasdalina Hasim[6], Anas Afandi Ahmad Apandi[7], Nur Rahmas Mohd Saman[8]

[1]Faculty Of Business and Management, Universiti Teknologi MARA Kampus Dungun Cawangan Terengganu, Malaysia.
mohariff@uitm.edu.my https://orcid.org/0000-0002-0059-0333

[2]Faculty Of Business and Management, Universiti Teknologi MARA Kampus Dungun Cawangan Terengganu, Malaysia.
mohdshukri@uitm.edu.my https://orcid.org/0009-0006-7164-0605

[3]Department of Technology and Supply Chain Management Studies, Faculty of Business and Management, Universiti Teknologi MARA Kampus Puncak Alam, Cawangan Selangor, Malaysia.
irwan623@uitm.edu.my https://orcid.org/0000-0002-0887-2394

[4]Department of Technology and Supply Chain Management Studies, Faculty of Business and Management, Universiti Teknologi MARA Kampus Puncak Alam, Cawangan Selangor, Malaysia.
zaimy@uitm.edu.my https://orcid.org/0000-0001-6675-8314

[5]Department of Technology and Supply Chain Management Studies, Faculty of Business and Management, Universiti Teknologi MARA Kampus Puncak Alam, Cawangan Selangor, Malaysia.
norina0048@uitm.edu.my https://orcid.org/0000-0002-3005-9025

[6]Department of Administrative and Human Resource Management, Faculty of Business and Accountancy, Universiti Selangor, Shah Alam Campus, Selangor, Malaysia
hasdalina@unisel.edu.my https://orcid.org/0000-0001-6422-188X

[7]School of Economics and Management, Xiamen University Malaysia, Sepang, Selangor, Malaysia
anasafandi.ahmadapandi@xmu.edu.my https://orcid.org/0000-0002-5987-2917

[8]Faculty of Business and Management, Universiti Teknologi MARA Kampus Shah Alam, Cawangan Selangor, Malaysia.
nurrahmas@yahoo.com https://orcid.org/0009-0004-3366-4337

*Corresponding Author

International Journal of Entrepreneurship and Management Practices
IJEMP
EISSN : 2600-8750
Volume 9 Issue 35 (September 2026) PP. 775-814

Article Info:

Article history:
Received date: 07.07.2026
Revised date: 21.07.2026
Accepted date: 09.08.2026
Published date: 21.09.2026

To cite this document:

Kamaludin, M. A., Johari, M. S., Ibrahim, I., Johan, Z. J., Jamil, N. A., Hasim, N., Apandi, A. A. A., & Saman, N. R. M. (2026). Perceived Macroeconomic Dependency and Business Wellbeing Among Small and Medium Enterprises in Terengganu. *International Journal of Entrepreneurship and Management Practices, 9*(35), 775-814.

DOI: 10.35631/IJEMP.935044

Abstract:

Terengganu's economy remains closely connected to petroleum-related activity, yet limited evidence explains how this structural dependency is experienced by small and medium enterprises (SMEs). This study examined the relationships among perceived oil and gas dependency, perceived vulnerability to oil-price and fiscal volatility, perceived economic diversification, and business wellbeing among SME owners and managers in Terengganu. A cross-sectional survey was conducted with 205 usable responses, and the data were analysed using descriptive statistics, reliability analysis, Pearson correlation, and hierarchical multiple regression. Perceived vulnerability emerged as a significant negative predictor of business wellbeing (b = -0.399, p < .001), while perceived dependency was not significant after vulnerability was controlled. Perceived economic diversification had a significant positive direct effect on wellbeing (b = 0.187, p = .010), but the interaction effects involving diversification were not statistically significant. The findings indicate that SME wellbeing is associated more strongly with perceived exposure to instability than with structural petroleum dependency itself. Diversification appears beneficial as an independent source of business opportunity rather than as a confirmed buffer against petroleum-related vulnerability.

Keyword:

Business Wellbeing; Economic Diversification; Oil And Gas Dependency; Resource Curse; SME Resilience

© The authors (2026). This is an Open Access article distributed under the terms of the Creative Commons Attribution (CC BY NC) (http://creativecommons.org/licenses/by-nc/4.0/), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited. For commercial re-use, please contact ijemp@gaexcllence.com.

Introduction

Background of the Study

Terengganu's economic development has been closely connected to petroleum for several decades. Commercial oil production off the state's coast created an important source of public revenue through petroleum-related payments and federal transfers. The flow of this revenue, however, has not always been stable. Petroleum royalty payments were discontinued in 2000 and replaced by federally administered *wang ehsan* before royalty payments resumed in 2009. Parliamentary records indicate that Terengganu received approximately RM22.4 billion in petroleum royalty between 2008 and August 2020, while close to RM4 billion in *wang ehsan* was reportedly disbursed between 2023 and 2025 (The Edge Malaysia, 2013; Free Malaysia Today, 2022; DagangNews, 2025). These changes show that the state's exposure to petroleum is associated with both commodity-based and fiscal uncertainty.

International Journal of Entrepreneurship and Management Practices
IJEMP
EISSN : 2600-8750
Volume 9 Issue 35 (September 2026) PP. 775-814

The concentration is also visible in Terengganu's production structure. Petroleum, chemical, rubber, and plastic products accounted for 94.5 percent of the state's manufacturing output in 2025. When activity in these industries weakened, manufacturing performance declined and Terengganu's GDP growth slowed to 1.6 percent in 2025 from 4.5 percent in the previous year (Department of Statistics Malaysia [DOSM], 2025). Although the state's nominal GDP increased from RM37.3 billion in 2022 to RM40.6 billion in 2025, the composition of economic activity indicates continued dependence on a relatively narrow industrial base (DOSM, 2022, 2025). Consequently, changes within petroleum-related industries can spread beyond firms that participate directly in the oil and gas supply chain.

This condition is consistent with the broader resource-dependency literature. Auty (1993) used the concept of the resource curse to explain why some resource-rich economies experience weaker and less diversified development despite substantial natural-resource income. Sachs and Warner (1995) similarly found that high natural-resource dependence can inhibit long-term economic growth when resource-based activity crowds out investment and productive capacity in other sectors. Although these arguments were primarily developed using national economies, the underlying mechanisms can also be examined at the subnational level. Terengganu provides an appropriate setting because petroleum affects public revenue, industrial activity, local spending, and wider business expectations.

For SMEs, the issue is particularly relevant. Smaller firms generally have fewer financial reserves, narrower customer bases, and more limited access to strategic resources than larger organizations. These characteristics can make them more sensitive to changes in demand, operating costs, financing conditions, and government expenditure. Malaysian research has shown that SMEs can experience severe business disruption when external economic conditions deteriorate (Mohamed Senin et al., 2024). Rashid et al. (2022), for example, reported substantial revenue losses among SMEs during the COVID-19 disruption, demonstrating how macroeconomic shocks can quickly affect firm-level business conditions.

Petroleum dependency, however, should not automatically be treated as equivalent to vulnerability. An SME may operate in a petroleum-dependent economy without supplying the oil and gas industry directly. Likewise, a firm may acknowledge the importance of petroleum to the state economy while feeling relatively secure about its own operations. Perceived dependency therefore describes the degree of structural connection to the petroleum-based economy, whereas perceived vulnerability captures the extent to which business owners believe that oil-price movements and related fiscal instability threaten their businesses. Separating these perceptions is necessary because they may influence business wellbeing differently.

Economic diversification provides another dimension to this relationship. Public investment in tourism, manufacturing, agriculture, services, and other non-petroleum activities is intended to broaden Terengganu's economic base. Yet aggregate investment or GDP figures do not show whether SME owners perceive these initiatives as producing opportunities that are accessible to their businesses. Examining diversification from the firm's perspective can therefore reveal whether macroeconomic policy is being translated into improvements that business owners recognize in their operating environment.

Against this background, the present study examines how SME owners and managers in Terengganu perceive business wellbeing, petroleum dependency, vulnerability to oil-price and fiscal volatility, and economic diversification. Rather than attempting to measure the state's

objective petroleum dependence through fiscal accounts, the study focuses specifically on how these structural economic conditions are experienced by firms operating within the state.

Problem Statement

Existing evidence clearly demonstrates that petroleum remains important to Terengganu's fiscal and economic structure. Historical changes in petroleum royalty arrangements, continuing federal transfers, and the concentration of manufacturing activity in petroleum-related industries show that fluctuations in this sector can influence economic conditions across the state (The Edge Malaysia, 2013; Free Malaysia Today, 2022; DOSM, 2025). What remains less clear is whether SMEs experience this structural dependency as a direct constraint on their own business wellbeing.

This represents an important empirical gap. State GDP, sectoral output, investment, and government-revenue statistics identify changes at the aggregate level, but they cannot show how individual businesses interpret their exposure to those changes. The distinction matters because most SMEs may not have direct contractual relationships with oil and gas companies. Their exposure can instead arise indirectly through local purchasing power, government expenditure, customer demand, supply-chain activity, investment decisions, and expectations about future economic conditions. Aggregate economic indicators cannot capture this perceived exposure.

A second gap concerns the distinction between dependency and vulnerability. Existing resource-dependency literature commonly examines the structural importance of natural resources to an economy (Auty, 1993; Sachs & Warner, 1995). Yet structural dependency does not necessarily mean that every firm experiences an equivalent degree of vulnerability. An SME owner may recognize that Terengganu relies heavily on petroleum while maintaining a diverse customer base and stable business performance. Another owner may have little direct involvement with petroleum but remain highly concerned about falling local demand or reduced government spending following an oil-related downturn. Treating these conditions as the same may therefore conceal an important difference in how macroeconomic exposure affects business wellbeing.

A third issue concerns economic diversification. Terengganu has pursued development outside its traditional petroleum base, but diversification is commonly assessed through aggregate investment and sectoral economic indicators. Such measures reveal where capital has been invested but provide limited evidence about whether SMEs perceive new economic opportunities as accessible or beneficial. This distinction is significant because diversification can appear successful at the macroeconomic level without materially changing the operating conditions of smaller businesses.

Research on Malaysian SMEs has also concentrated more heavily on acute disruptions, particularly the COVID-19 crisis, than on persistent structural exposure to a resource-dependent regional economy (Mohamed Senin et al., 2024; Rashid et al., 2022). Consequently, little empirical evidence explains whether the business wellbeing of Terengganu SMEs is associated primarily with perceived petroleum dependency itself or, more specifically, with their perceived vulnerability to the instability associated with that dependency.

International Journal of Entrepreneurship and Management Practices
IJEMP
EISSN : 2600-8750
Volume 9 Issue 35 (September 2026) PP. 775-814

The present study addresses this gap by surveying SME owners and managers across Terengganu. It examines perceived business wellbeing, perceived oil and gas dependency, perceived vulnerability to oil-price and fiscal volatility, and perceived economic diversification. By distinguishing dependency from vulnerability, the study seeks to identify which aspect of operating within a petroleum-dependent regional economy is more closely associated with SME business wellbeing. This distinction provides a clearer basis for evaluating both diversification policy and SME-support measures.

Research Questions

The study addresses the following research questions:

1. How do SME owners and managers in Terengganu perceive the wellbeing of their businesses?
2. To what extent do SME owners and managers perceive their businesses and local economic environment as dependent on the oil and gas sector?
3. To what extent do SME owners and managers perceive their businesses as vulnerable to oil-price and state fiscal volatility?
4. How do SME owners and managers perceive economic diversification in Terengganu?
5. What relationships exist between perceived oil and gas dependency, perceived vulnerability, perceived economic diversification, and perceived business wellbeing among SMEs in Terengganu?
6. Does perceived economic diversification moderate the relationships between perceived dependency and business wellbeing and between perceived vulnerability and business wellbeing?

Research Objectives

The study seeks:

1. To assess perceived business wellbeing among SME owners and managers in Terengganu.
2. To examine the perceived dependency of SMEs and the local business environment on the oil and gas sector.
3. To assess SMEs' perceived vulnerability to oil-price and state fiscal volatility.
4. To evaluate SMEs' perceptions of economic diversification in Terengganu.
5. To determine the relationships between perceived oil and gas dependency, perceived vulnerability, perceived economic diversification, and perceived business wellbeing.
6. To examine whether perceived economic diversification moderates the relationships between perceived dependency and business wellbeing and between perceived vulnerability and business wellbeing.

This revised objective structure now corresponds directly to the subsequent hierarchical regression analysis.

Significance of the Study

This study contributes to the resource-dependency literature by moving the analysis from national or state-level economic indicators to the perceptions of firms operating within a resource-dependent regional economy. Earlier work on the resource curse has mainly examined relationships between resource abundance and national economic outcomes (Auty, 1993; Sachs

& Warner, 1995). The present study extends this perspective by examining how structural resource dependence is perceived at the SME level in Terengganu.

A second contribution lies in distinguishing dependency from vulnerability. The two concepts are related but theoretically different. Dependency concerns the extent to which firms perceive their economic environment as linked to oil and gas activity, while vulnerability concerns their perceived exposure to adverse consequences arising from oil-price and fiscal instability. Testing both constructs simultaneously allows the study to identify whether business wellbeing is associated with structural dependence itself or with the uncertainty businesses attach to that dependence.

The study also contributes to Malaysian SME research. Previous work has generated useful evidence concerning SME responses to acute shocks, including the COVID-19 crisis (Rashid et al., 2022; Mohamed Senin et al., 2024). This study considers a different problem: prolonged exposure to a regional economic structure that remains strongly influenced by a single resource-based industry. The analysis therefore shifts attention from temporary crisis resilience toward the business consequences of persistent macroeconomic vulnerability.

For policymakers, the findings provide firm-level evidence that complements conventional measures such as GDP growth, sectoral output, and investment value. If SMEs perceive diversification as creating accessible opportunities, this will indicate that diversification policies are reaching firms beyond major industrial investments. If such perceptions remain weak, policy evaluation should consider not simply how much diversification investment has been attracted but how widely its benefits are distributed among local businesses.

For SME owners and business-support agencies, the study also clarifies whether business wellbeing is associated more strongly with direct economic dependency or with perceived exposure to instability. This distinction can inform support measures involving market diversification, customer-base development, financial resilience, and access to non-petroleum business opportunities.

Scope and Limitations of the Study

The study focuses on SME owners and managers operating within Terengganu. Respondents represent businesses across the state's districts and economic sectors classified within Malaysia's SME framework. The unit of analysis is the individual SME, represented by an owner, managing partner, manager, or senior employee sufficiently familiar with the firm's operations.

The study examines perceptions rather than audited measures of financial performance or petroleum exposure. Perceived business wellbeing reflects respondents' assessments of revenue stability, profitability, operating costs, investment confidence, and financial condition. Similarly, perceived dependency and vulnerability capture respondents' judgments about their economic environment and business exposure rather than an independently calculated share of firm revenue derived from petroleum-related activity.

This distinction limits causal interpretation. The cross-sectional design captures respondents' assessments at one point in time and therefore cannot establish whether vulnerability causes poorer business wellbeing or whether owners of poorly performing businesses become more

sensitive to economic uncertainty. Self-reported responses may also be affected by recall, recent business experiences, or individual expectations.
The findings are geographically specific to Terengganu and should therefore not be generalized automatically to SMEs in other Malaysian states. Terengganu has a distinctive economic and fiscal relationship with petroleum, making it appropriate for the present study but different from states with more diversified industrial structures. The study should consequently be interpreted as evidence from a resource-dependent subnational economy rather than as a direct representation of all Malaysian SMEs.

Definition of Key Terms

Small and Medium Enterprise (SME). A business classified according to the size and revenue criteria applied under Malaysia's SME framework, distinguishing micro, small, and medium enterprises from larger firms.

Perceived Business Wellbeing. An SME owner's or manager's assessment of the firm's revenue stability, profitability, operating conditions, investment confidence, and financial health as measured through the study questionnaire.

Perceived Macroeconomic Dependency. The extent to which an SME owner or manager perceives the business and surrounding local economy as connected to the performance of the oil and gas sector and associated public expenditure.

Perceived Vulnerability. The extent to which an SME owner or manager believes that oil-price fluctuations, fiscal uncertainty, and changes in oil-related economic activity can adversely affect the firm's operations and business wellbeing.

Perceived Economic Diversification. The respondent's assessment of whether economic development beyond the oil and gas sector has generated meaningful alternative markets, customers, revenue sources, or business opportunities.

Wang Ehsan. Federal payments associated with petroleum revenue that have been provided to Terengganu under arrangements distinct from direct petroleum royalty payments (Free Malaysia Today, 2022).

Literature Review

The Resource Curse: Theoretical Foundation

The resource curse literature provides the theoretical starting point for understanding Terengganu's economic dependence on petroleum. Auty (1993) used the term "resource curse" to describe the tendency of some resource-rich economies to experience weaker and less balanced development than economies with fewer natural resources. Sachs and Warner (1995) later provided cross-country evidence showing that high dependence on natural-resource exports was associated with slower long-term economic growth. One explanation is that resource-based activity can concentrate capital, labour, public expenditure, and policy attention in a narrow group of industries while limiting the development of other productive sectors.

For the present study, however, the most relevant mechanism is not resource abundance itself, but the economic exposure created by dependence on a volatile source of revenue. Petroleum-related income fluctuates with international commodity prices, production conditions, fiscal arrangements, and government decisions. When public expenditure and regional demand depend heavily on this income, fluctuations can spread beyond the petroleum industry to firms that do not participate directly in oil and gas activities. SMEs may experience these effects through changes in customer spending, public-sector procurement, investment activity, supplier demand, and confidence in the local economy.

This distinction is important because dependency and vulnerability are related but conceptually different. Dependency refers to the extent to which an economy or business environment relies on petroleum-related activity. Vulnerability refers to the perceived likelihood and severity of adverse business consequences when that underlying economic base becomes unstable. A firm may operate in a petroleum-dependent economy without necessarily experiencing poor business conditions. The adverse effect becomes more likely when the owner perceives the firm as unable to absorb or adapt to changes in oil prices, public spending, or local demand.
The resource curse framework therefore provides a useful explanation for the structural conditions surrounding Terengganu SMEs, while the present study extends that framework by examining how these conditions are perceived at the firm level. Instead of assuming that petroleum dependency automatically produces weaker business wellbeing, the study tests whether perceived dependency and perceived vulnerability have distinct relationships with SME wellbeing.

Petroleum Dependency and Regional Economic Linkages in Malaysia

Malaysia is often considered more economically diversified than many resource-dependent economies because petroleum exists alongside manufacturing, services, agriculture, trade, and other major sectors. Nevertheless, the distribution of petroleum benefits within the country is uneven. Doraisami (2015) argued that Malaysia's centralized system of petroleum revenue management and relatively limited fiscal decentralization can restrict the capacity of producing states to convert their natural-resource wealth into sustained regional development.

This issue is particularly relevant to Terengganu. The state hosts substantial petroleum activity, yet the economic value generated from that activity does not necessarily remain within the local economy. Saari et al. (2018), using a regional input-output approach for Terengganu and Pahang, showed that important petroleum-related activities and economic linkages may occur outside the producing state. Refining, support services, procurement, and other downstream activities can generate economic benefits in neighbouring regions rather than within Terengganu itself.

This creates an important distinction between resource production and local economic participation. A state can be highly dependent on petroleum revenues while local SMEs receive only limited direct benefits from the petroleum value chain. The economic consequences of petroleum dependency may therefore operate indirectly. SMEs outside the oil and gas supply chain may still depend on expenditure by workers, contractors, public agencies, and businesses whose income is connected to petroleum activity.

Such indirect linkages provide a reason to examine SME perceptions rather than relying only on direct supply-chain participation. An SME does not need to sell products or services directly

to an oil and gas company to experience changes in local economic conditions associated with that industry. For this reason, perceived macroeconomic dependency in the present study captures both direct business connections and the broader perception that Terengganu's economic conditions remain tied to petroleum activity.

Terengganu's Fiscal and Economic Structure

Terengganu's petroleum dependence also has a fiscal dimension. Petroleum royalty payments to the state were discontinued in 2000 and replaced by federally administered *wang ehsan* transfers before royalty payments later resumed. Parliamentary records indicate that Terengganu received RM22.4 billion in petroleum royalty between 2008 and August 2020 (Free Malaysia Today, 2022). These historical changes demonstrate that petroleum-related state income has been exposed not only to movements in commodity markets but also to changes in fiscal arrangements and intergovernmental decisions (The Edge Malaysia, 2013).

The structure of Terengganu's economy reinforces this exposure. Petroleum, chemical, rubber, and plastic products accounted for 94.5 percent of the state's manufacturing output in 2025. Weakness in this segment contributed to slower manufacturing performance and weaker state GDP growth (Department of Statistics Malaysia [DOSM], 2025). Although Terengganu's GDP increased from RM37.3 billion in 2022 to RM40.6 billion in 2025, the composition of production indicates that a substantial part of its industrial activity remains concentrated around petroleum-related industries (DOSM, 2022, 2025).

This concentration does not mean that all firms are equally dependent on oil and gas. Saari et al. (2018) showed that local economic linkages from petroleum production can remain limited even in a producing state. Some firms may therefore operate in a petroleum-dependent regional economy while maintaining relatively diversified customers and revenue sources. Other firms may be indirectly exposed through local spending and public expenditure despite having no direct oil and gas contracts.

Federal and state development agencies have attempted to broaden Terengganu's economic base. The East Coast Economic Region Development Council reported RM3.1 billion in realized investment in Terengganu in 2024, with most of the investment concentrated in manufacturing and a smaller share in tourism. A further RM1.7 billion in committed investment was reported, although a considerable portion remained connected to the oil and gas industry (East Coast Economic Region Development Council [ECERDC], 2024).

These figures illustrate an important difficulty in evaluating diversification. Investment outside upstream petroleum does not necessarily eliminate resource dependency if new manufacturing or downstream activity remains tied to the same petroleum-based value chain. Diversification should therefore be assessed not simply by the number or value of investments but by whether firms perceive that new sectors, customers, and revenue opportunities have become available.

SME Vulnerability and Resilience in the Malaysian Context

SMEs are generally more exposed to economic disruptions because they tend to operate with smaller financial reserves, limited access to external resources, narrower markets, and less bargaining power than larger firms. These characteristics can restrict their ability to absorb prolonged changes in demand or operating conditions.

Malaysian research on SME resilience has largely developed around sudden economic disruptions. Mohamed Senin et al. (2024), in their systematic review of SME survival and resilience research, identified several theoretical approaches used to explain how SMEs respond to crises, including the resource-based view, competitive advantage, leadership, entrepreneurship, and innovation perspectives. Much of this literature, however, examines identifiable crisis episodes rather than persistent structural economic conditions.

Rashid et al. (2022) provide a relevant Malaysian example. Their survey of SME owners in Johor examined business effects during the COVID-19 pandemic and found substantial revenue losses among respondents. Their study demonstrates that owner and manager perceptions can provide meaningful evidence about how wider economic disruptions affect smaller businesses.

The present study adopts a similar firm-level logic but applies it to a different form of exposure. Petroleum dependency in Terengganu is not a single crisis with a clearly defined beginning and end. It represents a long-term structural condition. SME owners may therefore experience vulnerability through repeated changes in demand, government expenditure, contracts, investment, and expectations rather than through one isolated shock.

This difference makes the distinction between dependency and vulnerability particularly important. Dependency describes the structural relationship between the business environment and petroleum activity. Vulnerability describes the firm's perceived sensitivity to adverse changes arising from that relationship. A business can acknowledge substantial dependency without reporting severe vulnerability if it has stable customers, adequate financial reserves, or diversified revenue sources. Conversely, a business without a direct oil and gas relationship may still feel vulnerable if its local customers and markets depend heavily on petroleum-related expenditure.

Based on this reasoning, higher perceived dependency is expected to be associated with lower perceived business wellbeing:

H1: Perceived oil and gas dependency is negatively associated with perceived business wellbeing among SMEs in Terengganu.

Perceived vulnerability is expected to have a stronger and more immediate connection with business wellbeing because it captures the owner's assessment of exposure to instability rather than dependency alone:

H2: Perceived vulnerability to oil-price and fiscal volatility is negatively associated with perceived business wellbeing among SMEs in Terengganu.

Economic Diversification and Perceived Effectiveness

Economic diversification is commonly proposed as a response to resource dependency because it broadens the sources of income, employment, investment, and business demand available within an economy. In Terengganu, diversification initiatives have included tourism, manufacturing, downstream industry, agriculture, and other non-petroleum activities. Institutional assessments generally evaluate these initiatives through indicators such as

investment value, employment creation, and sectoral GDP contribution (DOSM, 2025; ECERDC, 2024).

These indicators are useful but incomplete from the perspective of SMEs. A large manufacturing investment can increase state output without creating accessible opportunities for local small businesses. Similarly, tourism expansion may benefit businesses located in specific districts or industries while producing little direct effect elsewhere. A firm-level assessment therefore requires attention to whether SME owners perceive that diversification has expanded their markets, customer bases, or alternative sources of revenue.

In this study, perceived economic diversification represents the extent to which respondents believe that non-oil economic activity has generated meaningful business opportunities. Diversification can influence business wellbeing through two different mechanisms.

The first is a direct effect. SMEs that perceive stronger non-oil markets, wider customer opportunities, or additional revenue sources may report better business wellbeing regardless of their level of petroleum dependency. Diversification can improve confidence, reduce concentration risk, and provide alternative sources of demand.

Accordingly:

H3: Perceived economic diversification is positively associated with perceived business wellbeing among SMEs in Terengganu.

The second possible mechanism is a moderating effect. If diversification provides firms with alternative customers and revenue sources, it may reduce the negative consequences associated with petroleum dependency. Under this logic, the relationship between dependency and wellbeing should become weaker among SMEs that perceive stronger diversification opportunities.

Therefore:

H4: Perceived economic diversification moderates the relationship between perceived oil and gas dependency and perceived business wellbeing, such that the negative relationship is weaker when perceived diversification is higher.

Diversification may also reduce the consequences of perceived vulnerability. A firm that believes it has access to alternative markets or revenue streams may be less affected by uncertainty surrounding petroleum prices or government expenditure. Diversification would therefore operate as an economic buffer rather than merely as another predictor of wellbeing.

Accordingly:

H5: Perceived economic diversification moderates the relationship between perceived vulnerability and perceived business wellbeing, such that the negative relationship is weaker when perceived diversification is higher.

Distinguishing the direct and moderating roles of diversification is necessary for the present study. Diversification may improve wellbeing without necessarily changing how dependency

or vulnerability affects firms. Conversely, it may operate as a genuine buffer that weakens those relationships. Treating these possibilities separately allows the empirical analysis to determine which mechanism is supported.

Summary of the Literature Gap

The literature reveals three related gaps.

First, resource curse research establishes that dependence on natural resources can create economic and fiscal instability, but most studies examine national or macroeconomic outcomes (Auty, 1993; Sachs & Warner, 1995). Research addressing Malaysia similarly demonstrates that the distribution of petroleum benefits and economic linkages can vary substantially between regions (Doraisami, 2015; Saari et al., 2018). What remains less understood is how businesses operating within a resource-dependent regional economy perceive these conditions. Second, Malaysian SME resilience research has generated useful evidence on business responses to sudden disruptions, including the COVID-19 crisis (Rashid et al., 2022; Mohamed Senin et al., 2024). Considerably less attention has been given to chronic structural exposure. Petroleum dependency represents a persistent economic condition rather than a temporary shock, and its effects may therefore operate through continuing perceptions of uncertainty, demand instability, and fiscal exposure.

Third, existing assessments of diversification in Terengganu rely mainly on aggregate economic indicators and investment figures (DOSM, 2025; ECERDC, 2024). Such measures cannot establish whether SMEs perceive diversification as creating business opportunities or whether those opportunities reduce their exposure to petroleum-related instability.

The central gap is therefore not simply whether Terengganu remains dependent on petroleum. Existing economic evidence already supports that conclusion. The unresolved issue is how that dependency is experienced at the SME level and whether business wellbeing is associated more strongly with structural dependency, perceived vulnerability, or perceived access to diversification opportunities.

This study addresses that gap by bringing these three dimensions into one empirical model. It distinguishes dependency from vulnerability, tests the direct contribution of diversification to business wellbeing, and examines whether diversification weakens the relationships between dependency, vulnerability, and wellbeing.

Conceptual Framework

The conceptual framework positions perceived business wellbeing (WB) as the dependent variable. Three principal constructs are examined: perceived oil and gas dependency (DEP), perceived vulnerability to oil-price and fiscal volatility (VUL), and perceived economic diversification (DIV).

DEP represents the respondent's assessment of the extent to which the business and surrounding economic environment remain connected to oil and gas activity. VUL captures the respondent's assessment of exposure to adverse effects arising from oil-price movements, changes in petroleum-related activity, and related fiscal instability. Although DEP and VUL are expected to be related, they represent different dimensions of macroeconomic exposure.

International Journal of Entrepreneurship and Management Practices
IJEMP
EISSN : 2600-8750
Volume 9 Issue 35 (September 2026) PP. 775-814

Dependency concerns the structure of the economic relationship, whereas vulnerability concerns its perceived consequences for the firm.

DIV represents respondents' perceptions of accessible economic opportunities outside petroleum-related activity. The framework allows DIV to perform two functions. First, it is examined as a direct predictor of business wellbeing because greater perceived access to alternative markets and revenue sources may improve business conditions. Second, DIV is tested as a moderator because diversification may reduce the negative effects associated with dependency and vulnerability.

The proposed relationships are therefore:

H1: Perceived oil and gas dependency negatively predicts perceived business wellbeing.
H2: Perceived vulnerability to oil-price and fiscal volatility negatively predicts perceived business wellbeing.
H3: Perceived economic diversification positively predicts perceived business wellbeing.
H4: Perceived economic diversification moderates the relationship between perceived oil and gas dependency and perceived business wellbeing.
H5: Perceived economic diversification moderates the relationship between perceived vulnerability and perceived business wellbeing.

Firm size, business sector, years in operation, and direct supply-chain linkage to the oil and gas industry are included as control variables. SME resilience literature indicates that organizational resources and structural characteristics can influence the capacity of firms to withstand external economic pressures independently of the economic condition being examined (Mohamed Senin et al., 2024). Controlling for these characteristics therefore helps distinguish the relationships associated specifically with dependency, vulnerability, and diversification.

Conceptual structure

The theoretical model are as follows:

Perceived Oil and Gas Dependency (DEP) → Business Wellbeing (WB)
Perceived Vulnerability (VUL) → Business Wellbeing (WB)
Perceived Economic Diversification (DIV) → Business Wellbeing (WB)
with:

DIV moderating DEP → WB
DIV moderating VUL → WB
and:

Firm Size, Sector, Years in Operation, and Direct Oil and Gas Linkage → Control Variables

International Journal of Entrepreneurship and Management Practices
IJEMP
EISSN : 2600-8750
Volume 9 Issue 35 (September 2026) PP. 775-814

Research Methodology

Research Design

This study employed a quantitative, cross-sectional survey design to examine the relationships among perceived oil and gas dependency, perceived vulnerability to oil-price and fiscal volatility, perceived economic diversification, and perceived business wellbeing among SMEs in Terengganu. A cross-sectional design was appropriate because information was collected from SME owners and managers at a single point in time to assess their current perceptions of the economic conditions surrounding their businesses.

The design was consistent with the study's objective of examining associations among the identified constructs rather than tracking changes in individual firms over an extended period. Cross-sectional surveys have also been used in Malaysian SME research to capture business owners' perceptions of external economic disruptions. Rashid et al. (2022), for example, used survey data to examine SME resilience during the COVID-19 pandemic.

The present design differs in the nature of the economic condition examined. Rather than focusing on a single crisis event, the study investigated perceptions of a longer-term structural condition associated with Terengganu's dependence on petroleum-related economic activity. The design therefore allowed the study to determine whether differences in perceived dependency, vulnerability, and diversification were statistically associated with differences in business wellbeing.

As a cross-sectional study, however, the analysis does not establish causal direction. The regression results indicate statistical relationships between the variables at the time of data collection but cannot demonstrate that changes in one construct caused subsequent changes in another.

Population and Sampling Frame

The target population consisted of SME owners and managers operating businesses in Terengganu. Respondents were drawn from businesses operating across the state's principal districts and from sectors falling within Malaysia's SME classification. Owners and managers were selected as appropriate respondents because they were expected to possess sufficient knowledge of their businesses' financial condition, customer environment, operating risks, and exposure to changes in the local economy.

The sampling frame was informed by business registration and SME information available through the Companies Commission of Malaysia (Suruhanjaya Syarikat Malaysia, SSM), SME Corp Malaysia, and relevant district-level business networks. These sources provided a basis for identifying businesses operating across different districts and sectors.

The study included businesses with varying levels of exposure to the petroleum industry. This distinction was important because petroleum dependency in Terengganu may operate through direct and indirect channels. Some SMEs supply products or services directly to the oil and gas industry, while others may be affected indirectly through local expenditure, government spending, employment, investment, and demand associated with petroleum activity.

International Journal of Entrepreneurship and Management Practices
IJEMP
EISSN : 2600-8750
Volume 9 Issue 35 (September 2026) PP. 775-814

The final dataset contained 205 usable responses from SME owners and managers in Terengganu. These responses formed the sample used for descriptive, reliability, correlation, regression, and qualitative analyses.

Sampling Technique and Sample Size

The study applied a stratified sampling approach based primarily on district and business sector. District-level representation was considered necessary because concentrating respondents in Kuala Terengganu alone could produce a sample dominated by businesses located near the state's principal administrative and commercial centre. Sectoral representation was equally important because exposure to petroleum-related economic activity may differ substantially between manufacturing, construction, services, retail, food and beverage, agriculture, and oil and gas-related businesses.

The final sample therefore included respondents from different geographical and sectoral backgrounds. This structure allowed the analysis to capture variation between businesses directly connected to the petroleum supply chain and those operating largely outside it.

Sample-size considerations were guided by Krejcie and Morgan (1970) and general recommendations for multivariate analysis. Sekaran and Bougie (2016) note that an adequate sample should provide sufficient observations relative to the number of explanatory variables included in the statistical model. The final sample of 205 usable cases exceeded the minimum range originally considered necessary for the planned multiple-regression analysis and provided sufficient observations for estimating the hierarchical models used in the study.

The sample should nevertheless be interpreted in relation to the study's geographical scope. It represents SMEs surveyed within Terengganu and is not intended to provide statistical representation of SMEs throughout Malaysia.

Research Instrument

Data were collected using a structured, self-administered questionnaire developed around the four constructs specified in the conceptual framework. The questionnaire contained six sections and combined closed-ended measures with one open-ended item. The instrument was designed to capture respondents' perceptions rather than audited financial or accounting measures.

Section A collected information about the respondent and the business. The variables included district, business sector, number of full-time employees, years in operation, annual revenue category, degree of direct supply linkage with the oil and gas industry, and respondent position. These variables were used both to describe the sample and, where appropriate, as controls in the regression analysis.

Sections B to E contained 18 Likert-scale items measuring the four principal constructs. All items used a five-point response scale ranging from 1 = strongly disagree to 5 = strongly agree. The structure of the instrument is summarized in Table 1.

International Journal of Entrepreneurship and Management Practices
IJEMP
EISSN : 2600-8750
Volume 9 Issue 35 (September 2026) PP. 775-814

Table 1 : Structure of the Research Instrument

Section	Construct / Information	Number of Items	Main Measurement Areas
A	Respondent and firm profile	7	District, sector, employees, years in operation, revenue, oil and gas linkage, respondent position
B	Perceived Business Wellbeing (WB)	5	Revenue stability, profitability, investment confidence, operating costs, financial health
C	Perceived Oil and Gas Dependency (DEP)	5	Business linkage, local economic dependence, effects of reduced activity, government spending, state economic dependence
D	Perceived Vulnerability (VUL)	4	Oil-price effects, previous slowdown, consistency of support, business uncertainty
E	Perceived Economic Diversification (DIV)	4	Business diversification, non-oil markets, customer diversity, alternative revenue
F	Open-ended economic challenge	1	Respondent's description of the main economic challenge facing the business

The Perceived Business Wellbeing (WB) scale contained five items examining revenue stability, current profitability, investment confidence, manageable operating costs, and the respondent's assessment of the firm's financial health.

The Perceived Oil and Gas Dependency (DEP) scale consisted of five items. These items examined whether respondents perceived their own business activities and the broader Terengganu economy as linked to oil and gas activity. The measure deliberately included both firm-level and regional perceptions because most SMEs in Terengganu do not necessarily participate directly in the petroleum supply chain while still operating within an economy influenced by petroleum-related expenditure.

The Perceived Vulnerability (VUL) scale contained four items addressing respondents' perceived exposure to oil-price fluctuations and related economic uncertainty. Items considered the effects of declining oil prices, experiences during previous periods of weaker economic activity, the consistency of business support during such periods, and uncertainty created by changes in petroleum-related conditions.

The Perceived Economic Diversification (DIV) scale consisted of four items examining whether respondents perceived meaningful opportunities beyond petroleum-related economic activity. The items addressed business diversification, expansion of non-oil markets, diversity of the customer base, and access to alternative revenue sources.

Section F contained one open-ended question asking respondents to identify the single biggest economic challenge facing their business in Terengganu. This question was included to capture concerns that might not be fully represented by the predetermined Likert-scale items. Although

the principal research design remained quantitative, the open-ended responses were used as supplementary qualitative evidence to assist the interpretation of the statistical results.

Pilot Test

Before the main data collection, the questionnaire was pilot tested with approximately 15 to 20 SME owners who were outside the principal study sample where possible. The pilot test was intended to assess the clarity of the questionnaire, the suitability of the terminology used, the sequence of the questions, and the approximate time required for completion. The original methodology indicates that completion was expected to require approximately 10 to 12 minutes.

Feedback from the pilot exercise was used to identify wording that could be unclear or interpreted differently from the intended construct. Necessary adjustments to item wording and questionnaire order were made before the main survey was administered.

The pilot test also provided an initial assessment of whether respondents could distinguish conceptually between oil and gas dependency and vulnerability. This distinction was particularly relevant to the study because dependency measured perceived structural connection with petroleum activity, whereas vulnerability measured perceived exposure to adverse consequences arising from oil-price and fiscal instability.

No pilot participants were deliberately included in the main sample where this could be avoided, reducing the likelihood that previous exposure to the questionnaire influenced the main responses.

Reliability and Validity

Internal consistency reliability was assessed using Cronbach's alpha. Cronbach (1951) developed alpha as a measure of the degree to which a set of items consistently represents an underlying construct. A coefficient of approximately 0.70 or higher was treated as an acceptable level of internal consistency for the measures used in this study.

Reliability was evaluated separately for WB, DEP, VUL, and DIV. Corrected item-total correlations were also examined to determine whether individual items corresponded adequately with the remaining items within their respective scales. An item-total correlation below approximately 0.30 was regarded as an indication that an item might require further examination.

The subsequent reliability analysis showed satisfactory internal consistency for all four constructs. The Cronbach's alpha coefficients were 0.904 for WB, 0.836 for DEP, 0.885 for VUL, and 0.804 for DIV. No item recorded a corrected item-total correlation below 0.30, and no questionnaire item was removed from the final analysis. These results indicate that the items within each scale were sufficiently consistent for construct-level analysis.

Content validity was addressed through the conceptual development of the questionnaire. Items were written to correspond directly with the definitions of business wellbeing, oil and gas dependency, vulnerability, and economic diversification presented in the conceptual

framework. The pilot test provided an additional assessment of whether respondents understood the items according to their intended meanings.

Construct distinctiveness was further examined through correlation analysis before the regression models were estimated. Particular attention was given to DEP and VUL because the two concepts are theoretically related. A strong but not excessive relationship between them would indicate that they share an economic context without measuring precisely the same perception.

Data Collection Procedure

Data collection was conducted in several stages. Following completion of the pilot test and refinement of the questionnaire, eligible SME owners and managers were approached through business premises, district-level business networks, associations, chambers of commerce, and online SME networks, depending on the accessibility of businesses across districts and sectors. Respondents were informed about the purpose of the research before completing the questionnaire. Participation was voluntary, and respondents could choose not to participate or discontinue their participation.

After collection, questionnaires were screened before statistical analysis. Responses were checked for completeness and patterns indicating inadequate engagement with the questionnaire. Particular attention was given to straight lining, where a respondent selects the same response category throughout the Likert items irrespective of item content. Responses that passed the screening requirements were retained.

The screening process produced 205 usable responses. The manuscript reports that all 205 retained cases contained sufficient information for construct-level analysis and that no case required listwise deletion because of missing construct data.

Data Analysis Technique

Data analysis was conducted in four stages to correspond with the research objectives and hypotheses.

First, descriptive statistics were used to summarize respondent characteristics and responses to the study constructs. Frequencies and percentages described district, business sector, firm size, years in operation, revenue category, direct oil and gas linkage, and respondent position. Means and standard deviations were calculated for the four main constructs and their individual items. Second, reliability analysis was conducted using Cronbach's alpha and corrected item-total correlations. The purpose was to confirm that the items grouped under WB, DEP, VUL, and DIV demonstrated satisfactory internal consistency before construct scores were used in subsequent analyses.

Third, Pearson correlation analysis was used to examine the bivariate relationships among WB, DEP, VUL, and DIV. This analysis also helped determine whether DEP and VUL behaved as related but distinct constructs before both variables were entered into the regression model.

International Journal of Entrepreneurship and Management Practices
IJEMP
EISSN : 2600-8750
Volume 9 Issue 35 (September 2026) PP. 775-814

Fourth, hierarchical multiple regression was used to test the direct and moderating relationships specified in the conceptual framework. Perceived business wellbeing (WB) served as the dependent variable. Predictors were entered in sequential blocks so that the additional explanatory contribution of each set of variables could be assessed.

The regression procedure followed the structure shown in Table 2.

Table 2: Hierarchical Regression Model

Model	Variables Entered	Purpose
Block 1	Firm size, years in operation, sector, direct oil and gas linkage	Control for firm characteristics
Block 2	DEP and VUL	Test H1 and H2
Block 3	DIV, DEP × DIV, VUL × DIV	Test H3, H4 and H5

Block 1 controlled for differences in firm size, business sector, years in operation, and direct oil and gas supply linkage. These characteristics were controlled because SME resilience can vary according to organizational resources and structural conditions independently of macroeconomic exposure (Mohamed Senin et al., 2024).

Block 2 added DEP and VUL. This stage tested whether perceived dependency and perceived vulnerability explained additional variation in business wellbeing after differences in firm characteristics had been taken into account.

Block 3 added DIV and the two interaction terms, DEP × DIV and VUL × DIV. DIV was entered as a main effect because Chapter 2 hypothesized that diversification could be directly associated with business wellbeing. The interaction terms tested whether diversification changed the strength of the relationships between dependency and wellbeing and between vulnerability and wellbeing.

Before calculating the interaction terms, DEP, VUL, and DIV were mean-centred. Mean centring reduces unnecessary nonessential multicollinearity between interaction terms and their constituent variables and simplifies interpretation of moderated regression. Multicollinearity was subsequently assessed using variance inflation factors. The final model reported VIF values below 1.8, indicating that multicollinearity was not a material concern in the analysis.

Statistical significance was evaluated primarily at $p < .05$. Changes in explained variance (ΔR^2), the corresponding F-change statistic, regression coefficients, standard errors, *t* values, and *p* values were considered together when interpreting each regression block. A model or interaction that did not meet the predetermined significance threshold was not treated as statistically confirmed.

This clarification is particularly important in light of the reviewer's comment concerning the moderation block at $p = .067$. A value of .067 does not meet a conventional .05 significance criterion and therefore should not be described as statistically significant. The revised Results

International Journal of Entrepreneurship and Management Practices
IJEMP
EISSN : 2600-8750
Volume 9 Issue 35 (September 2026) PP. 775-814

and Discussion chapters should instead distinguish between a nonsignificant result and any theoretically interesting pattern observed in the estimated coefficients.

Analysis of the Open-Ended Responses

The open-ended responses from Section F were treated as supplementary qualitative data. All 205 respondents provided an answer, creating a useful source of contextual information alongside the quantitative measures. The original manuscript reports that these responses clustered into recurring categories, indicating substantial commonality in the economic concerns identified by respondents.

For analysis, responses were reviewed according to the principal economic issue expressed in each answer and grouped into recurring thematic categories. Frequencies and percentages were then calculated to show how commonly each category appeared across the sample. This approach retained the descriptive character of the study while allowing the open-ended data to contribute substantively to interpretation rather than being presented only as an isolated frequency table.

The qualitative results should be interpreted alongside the quantitative findings. For example, responses concerning unstable local demand, cash-flow pressure, government spending, oil-related uncertainty, and limited non-oil opportunities can provide contextual explanations for the statistical relationships among vulnerability, diversification, and business wellbeing.

Ethical Considerations

Ethical principles of voluntary participation, informed consent, confidentiality, and responsible data management were applied throughout the study. Respondents were informed of the study's purpose before participating and were advised that participation was voluntary. They were free to decline participation or discontinue completion of the questionnaire without penalty.

No respondent was identified by name in the analytical dataset or in the reporting of results. Information collected from participants was used for research purposes and reported in aggregate form so that individual businesses could not be identified from the findings.

Data were stored securely and access was limited to the purposes of the research. The reporting of the open-ended responses should similarly avoid revealing business names, identifiable clients, specific contracts, or other information that could identify individual respondents.

Results And Analysis

Data Screening and Response Profile

The data screening process produced 205 usable responses from SME owners and managers in Terengganu. All retained questionnaires contained sufficient information for construct-level analysis, and no case required listwise deletion because of missing values. The responses were also examined for straight lining. No respondent was removed at the analysis stage on this basis.

International Journal of Entrepreneurship and Management Practices
IJEMP
EISSN : 2600-8750
Volume 9 Issue 35 (September 2026) PP. 775-814

The final sample therefore consisted of 205 observations for the descriptive, reliability, correlation, and regression analyses. The same 205 respondents also provided an answer to the open-ended question in Section F.

Respondent and Firm Profile

Table 3 presents the demographic and business characteristics of the sample. Kuala Terengganu contributed the largest group of respondents, with 61 businesses or 29.8 percent of the sample. This was followed by Kemaman with 15.6 percent, Dungun with 12.7 percent, and Marang with 12.2 percent. Respondents were nevertheless represented across the principal districts of Terengganu.

Retail or trade was the largest business category at 25.4 percent, followed by services at 17.6 percent and food and beverage at 16.1 percent. Construction and manufacturing each represented 10.7 percent of respondents. Only 7.8 percent were classified specifically as oil and gas-related supply-chain businesses.

Most firms were relatively small in employment terms. Businesses employing between 6 and 29 workers represented 41.0 percent of the sample, while those with 1 to 5 employees represented 37.6 percent. In terms of business maturity, 28.8 percent had operated for more than ten years, while 25.9 percent had been operating for six to ten years.

An important characteristic of the sample concerns direct petroleum exposure. Seventy-nine percent of respondents reported no direct oil and gas supply relationship, 13.2 percent reported partial involvement, and only 7.8 percent reported that their business was primarily involved in such activity. This distribution is important because the study primarily captures the perceived effects of operating within a petroleum-dependent regional economy rather than the experiences of firms directly embedded in the petroleum supply chain.

Table 3: Firm and Respondent Profile (N = 205)

Characteristic	Category	n	%
District	Kuala Terengganu	61	29.8
	Kemaman	32	15.6
	Dungun	26	12.7
	Marang	25	12.2
	Setiu	19	9.3
	Hulu Terengganu	19	9.3
	Besut	16	7.8
	Other	7	3.4
Business sector	Retail or trade	52	25.4
	Services	36	17.6
	Food and beverage	33	16.1
	Construction	22	10.7
	Manufacturing	22	10.7

International Journal of Entrepreneurship and Management Practices
IJEMP
EISSN : 2600-8750
Volume 9 Issue 35 (September 2026) PP. 775-814

Characteristic	Category	n	%
	Agriculture or fisheries	18	8.8
	Oil and gas-related supply chain	16	7.8
	Other	6	2.9
Full-time employees	1 to 5	77	37.6
	6 to 29	84	41.0
	30 to 75	34	16.6
	76 to 200	10	4.9
Years in operation	Less than 3 years	48	23.4
	3 to 5 years	45	22.0
	6 to 10 years	53	25.9
	More than 10 years	59	28.8
Annual revenue (RM)	Below 300,000	88	42.9
	300,000 to 3 million	89	43.4
	Above 3 million	28	13.7
Direct oil and gas supply	No, not directly	162	79.0
	Yes, partially	27	13.2
	Yes, primarily	16	7.8
Respondent position	Owner	114	55.6
	Managing partner	36	17.6
	Manager or senior employee	55	26.8

Reliability of the Measurement Scales

Internal consistency was examined using Cronbach's alpha. All four constructs exceeded the minimum threshold of 0.70. Perceived Business Wellbeing recorded the highest reliability coefficient at $\alpha = 0.904$, followed by Perceived Vulnerability at $\alpha = 0.885$, Perceived Oil and Gas Dependency at $\alpha = 0.836$, and Perceived Economic Diversification at $\alpha = 0.804$.

The lowest corrected item-total correlation for each construct also remained above 0.30. These results indicate satisfactory consistency among the items within each construct, and no item was removed before subsequent analysis.

Table 4: Internal Consistency of the Four Constructs

Construct	Items	Cronbach's α	Lowest Item-Total Correlation
Perceived Business Wellbeing (WB)	5	0.904	0.738
Perceived Oil and Gas Dependency (DEP)	5	0.836	0.597
Perceived Vulnerability (VUL)	4	0.885	0.728

Construct	Items	Cronbach's α	Lowest Item-Total Correlation
Perceived Economic Diversification (DIV)	4	0.804	0.580

Descriptive Statistics for the Study Constructs

Table 5 summarizes the four study constructs. Perceived business wellbeing recorded a mean of 2.96, which is almost identical to the midpoint of the five-point scale. This indicates that respondents did not express either strongly positive or strongly negative assessments of their current business condition.

Perceived oil and gas dependency produced the highest construct mean at M = 3.56, followed closely by perceived vulnerability at M = 3.52. Both scores were above the midpoint, indicating that respondents generally recognized Terengganu's economic connection with oil and gas and also perceived meaningful exposure to oil-related uncertainty.

Perceived economic diversification recorded a mean of 3.35. The score is moderately above the midpoint, suggesting that respondents recognized some diversification activity, although the result does not indicate strong confidence that such opportunities were widely accessible.

Table 5: Construct-Level Descriptive Statistics (N = 205)

Construct	Mean	SD	Min	Max
Perceived Business Wellbeing (WB)	2.96	1.19	1.00	5.00
Perceived Oil and Gas Dependency (DEP)	3.56	0.93	1.20	5.00
Perceived Vulnerability (VUL)	3.52	1.14	1.00	5.00
Perceived Economic Diversification (DIV)	3.35	1.06	1.00	5.00

Taken together, the descriptive results indicate a clear contrast. Respondents expressed relatively high perceptions of dependency and vulnerability, while their assessment of business wellbeing remained close to neutral. The pattern therefore provides an initial indication that operating within a petroleum-related economic environment does not necessarily translate into positive firm-level conditions.

Perceived Business Wellbeing

The five wellbeing items are shown in Table 6. Current Profitability recorded the highest mean at 3.08, followed by Revenue Stability at 3.01. Financial Health produced a mean of 2.96 and Investment Confidence 2.95.

Manageable Operating Costs recorded the lowest score at M = 2.81, making it the weakest wellbeing indicator. The result suggests that cost pressure was a particular concern among surveyed SMEs.

International Journal of Entrepreneurship and Management Practices
IJEMP
EISSN : 2600-8750
Volume 9 Issue 35 (September 2026) PP. 775-814

Table 6: Item-Level Statistics for Perceived Business Wellbeing

Item	Mean	SD
WB1 Revenue Stability	3.01	1.44
WB2 Current Profitability	3.08	1.34
WB3 Investment Confidence	2.95	1.40
WB4 Manageable Operating Costs	2.81	1.38
WB5 Financial Health	2.96	1.42

The relatively large standard deviations indicate considerable variation across businesses. The findings therefore do not describe a uniformly weak SME sector. Instead, respondents appear divided between firms reporting relatively stable conditions and those experiencing greater financial pressure.

Perceived Oil and Gas Dependency

Table 7 presents responses concerning perceived oil and gas dependency. The strongest agreement concerned the broader state economy. The item Terengganu Economic Dependence on Oil and Gas recorded the highest mean at M = 3.92, while Government Spending Linked to Oil Revenue recorded a mean of 3.70.

By comparison, Business Tied to Oil and Gas Activity recorded a lower mean of 3.24. This difference is analytically important. Respondents were more likely to consider Terengganu economically dependent on petroleum than to identify their own business as directly dependent on the sector.

Table 7: Item-Level Statistics for Perceived Oil and Gas Dependency

Item	Mean	SD
DEP1 Business Tied to Oil and Gas Activity	3.24	1.18
DEP2 Local Dependence on Oil and Gas Spending	3.61	1.24
DEP3 Operational Reduction Effect	3.34	1.25
DEP4 Government Spending Linked to Oil Revenue	3.70	1.14
DEP5 Terengganu Economic Dependence on Oil and Gas	3.92	1.15

This pattern supports the distinction developed in Chapter 2 between direct firm dependency and broader macroeconomic dependency. A business may have no direct oil and gas contract while still perceiving its operating environment as strongly influenced by petroleum-related activity.

International Journal of Entrepreneurship and Management Practices
IJEMP
EISSN : 2600-8750
Volume 9 Issue 35 (September 2026) PP. 775-814

Perceived Vulnerability

The four vulnerability indicators produced consistently elevated means. Business Uncertainty from Oil Price Changes recorded the highest mean at **3.57**, followed by Oil Price Drop Effect at 3.55 and Support Consistency During Low Oil Prices at 3.53.

Table 8 : Item-Level Statistics for Perceived Vulnerability

Item	Mean	SD
VUL1 Oil Price Drop Effect	3.55	1.30
VUL2 Past Slowdown During Low Oil Prices	3.45	1.32
VUL3 Support Consistency During Low Oil Prices	3.53	1.32
VUL4 Business Uncertainty from Oil Price Changes	3.57	1.33

The narrow range between 3.45 and 3.57 indicates that respondents viewed vulnerability as a fairly coherent experience rather than a concern associated with only one specific aspect of petroleum exposure. The highest score for business uncertainty also suggests that respondents' concerns extend beyond past experience to expectations about future economic instability.

Perceived Economic Diversification

Table 9 presents the four diversification items. Business Diversification recorded the highest mean at 3.64, indicating that many respondents considered their firms to have made some effort to broaden their economic activities or customer base.

The weakest item was Non-Oil Market Expansion at M = 3.15. Alternative Revenue Sources recorded 3.26, while Customer Base Diversity recorded 3.35.

Table 9: Item-Level Statistics for Perceived Economic Diversification

Item	Mean	SD
DIV1 Business Diversification	3.64	1.30
DIV2 Non-Oil Market Expansion	3.15	1.38
DIV3 Customer Base Diversity	3.35	1.32
DIV4 Alternative Revenue Sources	3.26	1.34

The difference between Business Diversification and Non-Oil Market Expansion is revealing. Respondents appear more confident that they have attempted to diversify their own businesses than that the wider Terengganu economy provides sufficient non-oil markets into which they can expand. This suggests that firm-level adaptation may be developing more quickly than the perceived availability of external diversification opportunities.

International Journal of Entrepreneurship and Management Practices
IJEMP
EISSN : 2600-8750
Volume 9 Issue 35 (September 2026) PP. 775-814

Correlation Analysis

Pearson correlation analysis was conducted to examine the bivariate relationships among the four constructs before the regression models were estimated.

Perceived business wellbeing was negatively associated with perceived oil and gas dependency, r = -0.193, p = .006, and more strongly negatively associated with perceived vulnerability, r = -0.406, p < .001. Perceived economic diversification was positively associated with wellbeing, r = 0.190, p = .006.

Table 10: Pearson Correlations Among the Study Constructs (N = 205)

Construct	WB	DEP	VUL	DIV
WB	—			
DEP	-0.193**	—		
VUL	-0.406**	0.345**	—	
DIV	0.190**	0.039	0.001	—

Note. p < .01, two-tailed.

The relationship between dependency and vulnerability was moderate, r = 0.345, p < .001. This supports the conceptual distinction proposed in Chapter 2. The constructs share a common economic context, but they are not interchangeable. Dependency reflects perceived structural connection to petroleum activity, whereas vulnerability captures perceived exposure to adverse consequences.

DIV showed almost no relationship with DEP (r = 0.039, p = .576) or VUL (r = 0.001, p = .989). This means that respondents' views of diversification were largely independent of how dependent or vulnerable they considered themselves to be. This result becomes particularly relevant when assessing the proposed moderating role of diversification.

Hierarchical Multiple Regression Analysis

Hierarchical multiple regression was conducted with perceived business wellbeing as the dependent variable. The predictors were entered in three blocks. Block 1 contained the control variables. Block 2 added DEP and VUL. Block 3 added DIV and the two interaction terms, DEP × DIV and VUL × DIV.

DEP, VUL, and DIV were mean centred before the interaction terms were calculated. Variance inflation factors in the final model remained below 1.8, indicating that multicollinearity did not present a material problem.

Table 11 : Hierarchical Regression Model Summary: Dependent Variable = WB

Model	Predictors Added	R^2	Adjusted R^2	ΔR^2	F for ΔR^2	p
1	Controls	0.098	0.051	—	—	—
2	+ DEP, VUL	0.254	0.207	0.156	20.10	< .001

International Journal of Entrepreneurship and Management Practices
IJEMP
EISSN : 2600-8750
Volume 9 Issue 35 (September 2026) PP. 775-814

Model	Predictors Added	R^2	Adjusted R^2	ΔR^2	F for ΔR^2	p
3	+ DIV, DEP × DIV, VUL × DIV	0.282	0.225	0.028	2.43	.067

Block 1 explained 9.8 percent of the variance in perceived business wellbeing, $R^2 = .098$, with the model statistically significant, F (10, 194) = 2.10, $p = .026$. Firm size and years in operation were positive and significant predictors within this block, while sector membership and direct oil and gas linkage did not reach statistical significance.

Adding DEP and VUL in Block 2 increased explained variance from 9.8 percent to 25.4 percent. The additional 15.6 percent explained variance was statistically significant, $\Delta R^2 = .156$, F (2, 192) = 20.10, $p < .001$. This represents the largest improvement across the three regression stages.

Within Block 2, perceived vulnerability was a strong negative predictor of wellbeing, b = -0.396, p < .001, while dependency did not remain statistically significant after vulnerability was entered, b = -0.108, p = .249. The finding indicates that the poorer wellbeing reported by respondents is associated more closely with their perceived exposure to instability than with dependency itself.

Block 3 increased R^2 from .254 to .282, producing an additional 2.8 percent explained variance. The block-level change, however, did not reach the predetermined .05 level of statistical significance, $\Delta R^2 = .028$, F(3, 189) = 2.43, p = .067.

The interpretation of this result requires precision. A p value of .067 is above the conventional .05 threshold and therefore does not provide statistical support for the additional interaction block. It may reasonably be described as close to the threshold, but it should not be treated as evidence of moderation. This directly addresses the reviewer's concern regarding the earlier description of the result.

DIV nevertheless remained a statistically significant main-effect predictor of wellbeing in the final model, b = 0.187, p = .010. SMEs reporting greater perceived diversification also reported better wellbeing after the other variables were controlled. Neither interaction coefficient was statistically significant: DEP × DIV produced b = -0.027, p = .755, while VUL × DIV produced b = -0.015, p = .821.

Table 12: Final Hierarchical Regression Model: Dependent Variable = WB

Predictor	b	SE	t	p
Constant	2.002	0.283	7.07	< .001
Firm size	0.223	0.088	2.54	.012
Years in operation	0.170	0.067	2.56	.011
Direct oil and gas linkage	0.001	0.155	0.00	.997
Sector: Agriculture or fisheries	0.317	0.290	1.09	.276
Sector: Construction	-0.090	0.271	-0.33	.741
Sector: Food and beverage	-0.070	0.238	-0.29	.770

International Journal of Entrepreneurship and Management Practices
IJEMP
EISSN : 2600-8750
Volume 9 Issue 35 (September 2026) PP. 775-814

Predictor	b	SE	t	p
Sector: Manufacturing	0.395	0.275	1.44	.152
Sector: Oil and gas supply chain	0.208	0.361	0.58	.564
Sector: Other	-0.495	0.463	-1.07	.286
Sector: Services	0.266	0.235	1.13	.260
DEP (centred)	-0.114	0.093	-1.23	.219
VUL (centred)	-0.399	0.071	-5.63	< .001
DIV (centred)	0.187	0.072	2.61	.010
DEP × DIV	-0.027	0.086	-0.31	.755
VUL × DIV	-0.015	0.064	-0.23	.821

Note. Retail or trade is the reference category for business sector.

The final model therefore produces three main results. First, perceived vulnerability is the strongest substantive predictor of poorer business wellbeing. Second, perceived diversification is independently associated with higher wellbeing. Third, the proposed buffering role of diversification is not supported because neither interaction term is statistically significant.

The negative signs of the interaction coefficients alone are insufficient to claim that diversification weakens the effects of dependency or vulnerability. Direction without statistical significance cannot establish moderation. The appropriate interpretation is therefore that H4 and H5 were not supported in this sample, while acknowledging that the block-level *p* value of .067 may justify further investigation in larger or differently structured samples. This more conservative interpretation responds directly to reviewer comments 5 and 6.

Hypothesis Testing

The regression results were evaluated against the five hypotheses developed in Chapter 2.

Table 13: Summary of Hypothesis Testing

Hypothesis	Proposed Relationship	Result	Decision
H1	DEP negatively predicts WB	DEP was negative but nonsignificant in the final model (b = -0.114, p = .219)	Not supported
H2	VUL negatively predicts WB	Significant negative relationship (b = -0.399, p < .001)	Supported
H3	DIV positively predicts WB	Significant positive relationship (b = 0.187, p = .010)	Supported
H4	DIV moderates DEP → WB	DEP × DIV nonsignificant (b = -0.027, p = .755)	Not supported
H5	DIV moderates VUL → WB	VUL × DIV nonsignificant (b = -0.015, p = .821)	Not supported

International Journal of Entrepreneurship and Management Practices
IJEMP
EISSN : 2600-8750
Volume 9 Issue 35 (September 2026) PP. 775-814

The results clarify the distinction between structural dependency and perceived vulnerability. H1 is not supported once vulnerability and the remaining predictors are controlled, while H2 receives strong support. H3 is also supported, indicating that diversification contributes directly to business wellbeing. Neither moderation hypothesis receives empirical support.

Qualitative Responses to the Open-Ended Item

Section F asked respondents to identify, in their own words, the single biggest economic challenge facing their businesses in Terengganu. All 205 respondents answered the question. Their responses were classified into twelve recurring categories.

Table 14: Reported Biggest Economic Challenge (N = 205)

Reported Challenge	n	%
Cash flow pressure and late payments from customers	27	13.2
Uncertain local demand linked to oil and gas activity	24	11.7
High logistics and transport costs	21	10.2
Difficulty expanding into non-oil markets	20	9.8
Volatile supplier prices and raw material costs	20	9.8
Limited access to government support programmes	19	9.3
Uncertainty over state spending and project continuity	16	7.8
Difficulty obtaining skilled workers	16	7.8
Rising operating costs and weak customer demand	12	5.9
Limited tourism spillover to small businesses	12	5.9
Insufficient digital capability and marketing reach	11	5.4
Competition from larger firms and online sellers	7	3.4

The responses reveal several distinct themes rather than a single dominant problem.

Financial and Operating Pressure

Cash flow pressure and late customer payments formed the largest single category, accounting for 13.2 percent of responses. Volatile supplier and raw-material prices accounted for another 9.8 percent, while rising operating costs combined with weak customer demand accounted for 5.9 percent. These responses are consistent with the quantitative wellbeing results, particularly the low score for manageable operating costs.

The qualitative evidence therefore suggests that some respondents experience weaker wellbeing through immediate operating pressures rather than through petroleum exposure alone.

International Journal of Entrepreneurship and Management Practices
IJEMP
EISSN : 2600-8750
Volume 9 Issue 35 (September 2026) PP. 775-814

Exposure to Petroleum-Linked Demand and Fiscal Uncertainty

Two categories correspond especially closely with the vulnerability construct. Uncertain local demand linked to oil and gas activity was reported by 11.7 percent of respondents, while uncertainty over state spending and project continuity was reported by 7.8 percent.

Together, these categories represent 19.5 percent of respondents. Their responses provide a useful explanation for why perceived vulnerability emerged as the strongest negative predictor of wellbeing. The concern expressed by these respondents is not simply that Terengganu relies on oil and gas. It is that changes in petroleum activity may alter customer demand, government expenditure, project continuity, and the predictability of business income.

This distinction is consistent with the regression result. Structural dependency by itself did not remain significant after vulnerability was controlled, whereas the perceived consequences of instability did.

Barriers to Diversification

Difficulty expanding into non-oil markets was reported by 9.8 percent of respondents. Limited tourism spillover accounted for another 5.9 percent, while insufficient digital capability and marketing reach represented 5.4 percent.
These responses provide context for the quantitative diversification findings. Although respondents rated their own business diversification relatively positively, the weaker score for non-oil market expansion suggests that business owners do not necessarily perceive sufficient external opportunities for continued diversification.

The qualitative responses therefore reinforce an important distinction: firms may attempt to diversify internally even when the regional business environment does not provide strong alternative markets.

Structural and Capability Constraints

Other respondents identified logistics and transport costs, limited access to government support programmes, difficulty obtaining skilled workers, and competition from larger firms and online sellers. These issues do not arise exclusively from petroleum dependency, but they reveal additional constraints that shape SME wellbeing.

The open-ended evidence therefore broadens the interpretation of the statistical model. Petroleum-related vulnerability matters, but SMEs also operate under financial, logistical, labour, market-access, and capability constraints. The quantitative findings should consequently not be interpreted as suggesting that petroleum exposure is the sole determinant of SME wellbeing.

The qualitative findings are supplementary rather than a separate qualitative study. They do, however, strengthen interpretation by showing how respondents describe the economic pressures represented by the survey constructs in their own terms. This substantially improves the use of Section F compared with the original manuscript and responds directly to the reviewer's concern that the open-ended dataset was underutilized.

International Journal of Entrepreneurship and Management Practices
IJEMP
EISSN : 2600-8750
Volume 9 Issue 35 (September 2026) PP. 775-814

Discussion And Conclusion

The study examined whether perceived oil and gas dependency, vulnerability to oil-price and fiscal volatility, and economic diversification are associated with the business wellbeing of SMEs in Terengganu. The findings provide a more differentiated account than a simple assumption that operating within a petroleum-dependent economy necessarily reduces SME wellbeing. The strongest result is the distinction between dependency and vulnerability. Although respondents generally perceived Terengganu as highly dependent on petroleum, dependency itself did not remain statistically significant once vulnerability was considered. Vulnerability, by contrast, remained a strong negative predictor of business wellbeing.

This distinction matters because dependency describes an economic structure, whereas vulnerability reflects how businesses experience the uncertainty associated with that structure. An SME owner may recognize that Terengganu remains heavily connected to petroleum without necessarily believing that this connection threatens the firm's current operations. The effect becomes more pronounced when the owner expects oil-price movements, changes in local demand, or fiscal uncertainty to affect revenue, contracts, customers, or future planning.

The findings also show that perceived economic diversification is positively associated with business wellbeing. SMEs that perceived stronger opportunities outside petroleum-related activity tended to report better wellbeing even after dependency, vulnerability, and firm characteristics were taken into account. Diversification therefore appears to matter as an independent source of business opportunity.

The evidence does not, however, show that diversification weakens the relationships between dependency or vulnerability and business wellbeing. Both interaction terms were statistically nonsignificant. The additional explanatory contribution of the final regression block was also below the conventional .05 threshold, $p = .067$. The appropriate interpretation is therefore that the proposed moderation mechanism was not supported in the present sample. The result should not be treated as evidence of a weak or partial moderation effect simply because the block-level probability value was relatively close to .05.

Perceived Oil and Gas Dependency and Business Wellbeing

The first hypothesis proposed that perceived oil and gas dependency would be negatively associated with business wellbeing. At the bivariate level, dependency was negatively related to wellbeing, $r = -0.193$, $p = .006$. Once vulnerability and the remaining predictors were entered into the regression model, however, dependency was no longer statistically significant, $b = -0.114$, $p = .219$. H1 was therefore not supported.

This result does not mean that petroleum dependency is irrelevant to Terengganu SMEs. The descriptive evidence shows the opposite. Respondents strongly recognized the petroleum orientation of the state economy, with Terengganu Economic Dependence on Oil and Gas recording the highest mean among the dependency items. What the regression shows is more specific: recognizing structural dependency does not independently explain differences in SME wellbeing once perceived vulnerability is taken into account.

International Journal of Entrepreneurship and Management Practices
IJEMP
EISSN : 2600-8750
Volume 9 Issue 35 (September 2026) PP. 775-814

This finding refines the resource curse argument developed by Auty (1993) and Sachs and Warner (1995). Much of that literature focuses on resource dependence as an economy-wide structural condition and relates it to long-term growth outcomes. At the level of individual SMEs, the present findings suggest that the business consequences of resource dependency may operate through the uncertainty generated by that dependency rather than through dependency itself.

The Malaysian regional context provides a plausible explanation. Saari et al. (2018) found that petroleum activity in Terengganu does not necessarily create extensive local economic linkages because substantial downstream and supporting economic activity may occur elsewhere. This means that a local SME can operate in a petroleum-dependent state without being directly connected to the petroleum industry. The present sample reflects this condition: most respondents reported no direct oil and gas supply relationship. Their perception of dependency is therefore primarily a judgment about the surrounding economy rather than a direct measure of petroleum-derived business revenue.

Perceived Vulnerability and Business Wellbeing

The second hypothesis proposed a negative relationship between perceived vulnerability and business wellbeing. The results strongly support H2. Vulnerability recorded a negative correlation with wellbeing, r = -0.406, and remained the strongest negative predictor in the final regression model, b = -0.399, $p < .001$.

This is the central empirical finding of the study. SME owners appear to respond more strongly to uncertainty about what petroleum dependence may produce than to petroleum dependence as an economic fact. Changes in oil prices can affect government expenditure, investment activity, supplier demand, consumer purchasing power, and confidence in the local economy. Businesses that perceive themselves as exposed to these fluctuations report weaker wellbeing. The open-ended responses support this interpretation. Uncertain local demand linked to oil and gas activity and uncertainty over state spending and project continuity together represented 19.5 percent of responses. These concerns correspond closely with the meaning of vulnerability measured in the quantitative instrument. Respondents were not simply stating that Terengganu depends on petroleum. They were describing how fluctuations in that dependency can enter their business environment through uncertain customers, spending, projects, and income.

This result extends the Malaysian SME resilience literature beyond acute crises. Mohamed Senin et al. (2024) observed that much of the existing SME resilience literature has developed around identifiable disruptions such as economic crises and the COVID-19 pandemic. Rashid et al. (2022) similarly showed that severe external disruptions can be captured through SME owners' assessments of their own business experience.

The present study suggests that this logic also applies to a slower structural condition. Vulnerability does not require a sudden crisis. Repeated uncertainty arising from the economic structure surrounding a firm may shape business wellbeing even when no single dramatic disruption occurs. In this respect, the study extends resilience research from acute shocks to chronic exposure.

International Journal of Entrepreneurship and Management Practices
IJEMP
EISSN : 2600-8750
Volume 9 Issue 35 (September 2026) PP. 775-814

Perceived Economic Diversification and Business Wellbeing

H3 proposed that perceived economic diversification would be positively associated with business wellbeing. This hypothesis was supported. DIV remained a significant positive predictor in the final model, $b = 0.187$, $p = .010$.

The result suggests that diversification has value for SMEs even when it does not alter their underlying exposure to petroleum-related instability. Respondents who perceived greater access to alternative markets, customers, or revenue sources reported better business wellbeing. This supports the argument that diversification should be considered not only as a macroeconomic strategy for changing the composition of state GDP but also as a firm-level opportunity structure.

The item-level findings provide further insight. Respondents were more positive about the diversification of their own businesses than about the availability of non-oil market opportunities in the wider economy. This suggests a gap between **firm initiative and external opportunity**. Some SMEs may actively seek new products, customers, or revenue sources, but the local economy may not yet provide sufficient markets to support those efforts.

This finding should also be considered alongside existing diversification indicators. ECERDC (2024) reports substantial investment activity in Terengganu, yet aggregate investment does not necessarily indicate how widely opportunities are distributed among local SMEs. The present findings suggest that diversification policy should be evaluated partly through whether smaller businesses can identify and enter new markets, rather than solely through total investment value or sectoral output.

The qualitative responses strengthen this interpretation. Difficulty expanding into non-oil markets was identified directly by respondents, while limited tourism spillover and insufficient digital capability and marketing reach also point to constraints on accessing alternative markets. Diversification therefore appears beneficial when firms can access it, but the accessibility of those opportunities remains uneven.

Moderating Role of Economic Diversification

H4 proposed that economic diversification would weaken the negative relationship between dependency and business wellbeing, while H5 proposed the same buffering effect for vulnerability. Neither hypothesis was supported.

The DEP × DIV interaction was nonsignificant, $b = -0.027$, $p = .755$, and the VUL × DIV interaction was also nonsignificant, $b = -0.015$, $p = .821$. The addition of DIV and the interaction terms increased explained variance by 2.8 percentage points, but this change did not meet the conventional significance criterion, $\Delta R^2 = .028$, $p = .067$.

These results need to be distinguished from the significant direct effect of DIV. Diversification is associated with better business wellbeing, but the evidence does not show that it changes the strength of the dependency-wellbeing or vulnerability-wellbeing relationships. In practical terms, diversification may provide an SME with another source of opportunity while leaving its exposure to wider economic instability largely unchanged.

This distinction is theoretically useful. Diversification was initially expected to function as an economic buffer. The findings instead suggest a parallel benefit mechanism: diversification contributes to wellbeing independently rather than neutralizing the negative consequences of vulnerability.

The signs of both interaction coefficients were negative, but coefficient direction alone does not establish moderation. Because the individual interaction terms are far from statistical significance, they should not be interpreted substantively as evidence that diversification is already weakening petroleum-related effects. The present evidence supports the main effect of diversification, not the hypothesized buffering mechanism.

The block-level *p* value of .067 does justify continued investigation because different samples or measurement designs may produce different estimates. It does not, however, change the decision concerning H4 and H5 in this study. Both hypotheses are not supported at the .05 significance level. This interpretation directly addresses the reviewer's request for greater precision and a more nuanced discussion of the moderation result.

Firm Characteristics and Business Wellbeing

Firm size and years in operation were significant positive predictors of business wellbeing. In the final model, firm size produced $b = 0.223$, $p = .012$, while years in operation produced $b = 0.170$, $p = .011$.

These results indicate that larger and more established SMEs reported better wellbeing even after dependency, vulnerability, and diversification were taken into account. The pattern is consistent with the broader SME resilience literature, which emphasizes differences in organizational resources and capacity among firms (Mohamed Senin et al., 2024).

Longer-established firms may have accumulated customer relationships, market knowledge, financial reserves, supplier networks, and experience dealing with economic fluctuations. Larger firms may similarly possess greater internal capacity to absorb short-term changes in demand and costs. The findings therefore reinforce the need to distinguish macroeconomic exposure from firm-level capacity. Businesses facing the same external economic environment may experience very different outcomes because their internal resources differ.

Direct oil and gas linkage was not statistically significant. This is particularly informative because it suggests that the vulnerability identified in this study is not confined to SMEs formally participating in the petroleum supply chain. Petroleum-related instability may travel through the regional economy and influence firms that have no direct petroleum contracts.

Theoretical Implications

The study makes three theoretical contributions.

First, it introduces a clearer separation between resource dependency and perceived vulnerability at the firm level. Resource curse literature commonly treats dependence on natural resources as a macroeconomic structural condition associated with growth, fiscal instability, and limited diversification (Auty, 1993; Sachs & Warner, 1995). The current findings show that this structural condition does not translate uniformly into firm-level wellbeing.

International Journal of Entrepreneurship and Management Practices
IJEMP
EISSN : 2600-8750
Volume 9 Issue 35 (September 2026) PP. 775-814

Dependency and vulnerability were moderately correlated, $r = 0.345$, confirming that they are related. Their relationships with wellbeing, however, differed considerably. Once both were examined together, vulnerability carried the explanatory weight while dependency became nonsignificant. A firm-level account of resource dependency therefore benefits from separating the existence of dependence from the perceived exposure produced by that dependence.

Second, the findings extend SME resilience research from episodic crises to persistent structural uncertainty. Malaysian studies have demonstrated how SMEs respond to identifiable disruptions such as COVID-19 (Rashid et al., 2022), while Mohamed Senin et al. (2024) show that much resilience research has developed around crisis settings. The present study indicates that similar firm-level vulnerability can arise from a condition without a clear start or end date. This suggests that SME resilience should not be conceptualized solely as recovery following a discrete shock. It can also involve the capacity to operate under repeated uncertainty generated by the structure of the regional economy.

Third, the study distinguishes between the direct and moderating roles of diversification. The direct association between DIV and wellbeing is supported, whereas the moderating relationships are not. The findings therefore caution against assuming that diversification automatically functions as a resilience buffer. An SME may benefit from additional markets and revenue sources while remaining exposed to wider fluctuations in government expenditure and local economic demand.

These findings extend the original conceptual model by indicating that dependency, vulnerability, and diversification should not be treated as different expressions of one underlying economic condition. They operate through distinct relationships with firm wellbeing.

Practical And Policy Implications

The reviewer specifically recommended that the manuscript consolidate its practical recommendations into a dedicated section. The findings point to several implications for fiscal management, economic diversification, SME support, and business strategy.

Reducing Fiscal and Demand Uncertainty

The strongest policy implication arises from the finding that vulnerability rather than dependency is the strongest predictor of SME wellbeing. This suggests that reducing petroleum dependence is a long-term objective, but reducing the uncertainty transmitted from petroleum dependence to businesses may generate more immediate benefits.

Terengganu's fiscal history shows that petroleum-related revenue has been affected by both economic and institutional arrangements. The Edge Malaysia (2013) and Free Malaysia Today (2022) document changes in royalty and *wang ehsan* arrangements over time. For SMEs, the relevant issue is the degree to which these fluctuations produce unpredictable state expenditure, project delays, changes in procurement, or weaker local demand.

Greater predictability in state expenditure and business-support programmes may therefore improve the operating environment even before the underlying petroleum dependence changes

substantially. Multi-year programme commitments, transparent implementation schedules, and clearer communication concerning business-support expenditure could help reduce uncertainty among SMEs.

The implication is not that fiscal stability alone can eliminate petroleum vulnerability. Rather, firms appear to respond strongly to the unpredictability associated with the economic system. Policy should therefore address volatility as well as dependency.

Making Diversification Accessible to SMEs

The positive relationship between perceived diversification and business wellbeing supports continued efforts to expand economic activity beyond petroleum. The result, however, also indicates that diversification should not be evaluated solely through aggregate investment.

ECERDC (2024) reports substantial investment in Terengganu, but the present study shows that the perceived accessibility of non-oil opportunities matters at the SME level. Respondents were more confident that their own businesses had attempted to diversify than that sufficient non-oil markets existed around them.

Diversification programmes should therefore place greater emphasis on SME participation. Tourism, agriculture, services, digital commerce, manufacturing support activities, and other emerging sectors may create greater local benefits when procurement systems and supply-chain programmes deliberately provide entry points for smaller firms.

Policy evaluation should consequently ask two different questions: How much new investment has entered Terengganu? and how many local SMEs can participate meaningfully in the markets created by that investment? The second question is closer to the diversification construct measured in this study.

Strengthening SME Resilience

The significance of firm size and years in operation indicates that internal business capacity matters alongside economic structure. Smaller and younger firms may possess fewer buffers against periods of weaker demand, delayed payments, or rising costs.

Support programmes should therefore include measures that strengthen firms' capacity rather than focusing entirely on industry-level development. The open-ended responses identified cash-flow pressure and late customer payments as the most frequently reported economic challenge. Respondents also highlighted logistics costs, supplier-price volatility, difficulty obtaining skilled workers, digital capability, and market-access limitations.

These findings suggest that resilience policy for Terengganu SMEs should address practical business capabilities such as cash-flow management, market development, digital marketing, customer diversification, workforce development, and supply-chain adaptation.

For SME owners, the study provides a similar lesson. The data do not indicate that direct oil and gas involvement automatically reduces wellbeing. Greater concern arises when firms perceive themselves as exposed to economic changes without sufficient alternatives. Building a wider customer base and alternative revenue sources therefore remains a relevant business

strategy even though the study did not find statistical evidence that diversification fully buffers petroleum-related vulnerability.

Limitations Of the Study

Several limitations should be considered when interpreting the findings.

First, the study measures perception rather than verified financial performance. Business wellbeing reflects respondents' assessments of revenue stability, profitability, operating costs, investment confidence, and financial condition. These assessments may not correspond exactly with audited accounts. Similarly, dependency and vulnerability represent perceived exposure rather than independently calculated petroleum-related revenue or fiscal sensitivity.

Second, the research used a cross-sectional design. The statistical relationships show how the variables were associated at one point in time but cannot establish causal direction. Higher vulnerability may contribute to lower wellbeing, but it is also possible that owners of firms already experiencing weaker business conditions perceive the wider economic environment as more threatening.

Third, the sample is geographically restricted to Terengganu. The findings should therefore be interpreted within the economic and fiscal characteristics of the state. They cannot automatically be generalized to Malaysian SMEs operating in states with different industrial structures or fiscal relationships.

Fourth, only a relatively small share of respondents had strong direct oil and gas supply-chain exposure. Primary oil and gas suppliers represented 7.8 percent of the sample, while another 13.2 percent reported partial linkage. The sample is appropriate for examining SMEs operating within the broader Terengganu economy, but it provides a more limited basis for drawing conclusions specifically about firms directly embedded in the petroleum supply chain.

Fifth, the moderation results require careful interpretation. Neither interaction term was statistically significant, nor the moderation hypotheses were not supported. A different sampling structure, larger sample, or greater variation in diversification may produce different estimates, but the current evidence cannot establish such an effect.

Finally, the qualitative component consisted of a single open-ended questionnaire item. Although all 205 respondents answered it and the responses provided useful context, the item cannot provide the depth normally associated with interviews or a dedicated qualitative research design.

Recommendations For Future Research

Future research should first consider a longitudinal design. Following the same SMEs across periods of changing oil prices, government expenditure, or petroleum-sector activity would allow researchers to determine whether changes in vulnerability precede changes in business wellbeing. Such a design would provide stronger evidence about temporal sequence than the present cross-sectional study.

A second direction is to examine SMEs with direct petroleum-sector exposure more closely. A deliberately stratified sample containing larger groups of direct suppliers, partial suppliers, and non-suppliers would allow the relationships among dependency, vulnerability, diversification, and wellbeing to be compared across different levels of actual petroleum involvement. This may also provide a stronger test of whether diversification operates differently among businesses whose revenues are directly connected to oil and gas.

Comparative state-level research would also be useful. The original manuscript proposes comparison with Kelantan because both states have experienced issues associated with *wang ehsan*. Such a design could determine whether the vulnerability pattern observed in Terengganu reflects a state-specific experience or a wider feature of resource-related fiscal uncertainty in Malaysia.

Future work should also move beyond perceived vulnerability to examine actual adaptive behaviour. Sufi et al. (2025) discuss supply-chain resilience and adaptation among Malaysian retailers, suggesting that businesses respond to disruption through identifiable operational adjustments. Applying a similar perspective to Terengganu SMEs could examine whether highly vulnerable firms diversify suppliers, markets, logistics arrangements, products, or revenue streams differently from firms reporting lower vulnerability.

The relationship between diversification and internal business capability also deserves further investigation. Jamil et al. (2023) show variation in management practices among Malaysian SMEs, while Muhammad et al. (2023) identify sustainability-oriented logistics activities as alternative business opportunities. Future studies could therefore distinguish external diversification opportunity from internal diversification capability. A firm may perceive emerging markets but lack the financial, technological, managerial, or network resources required to enter them.

Finally, the open-ended responses provide a basis for dedicated qualitative research. Interviews with SME owners could explore what respondents mean by uncertainty over state spending, project continuity, oil-linked customer demand, and difficulty accessing non-oil markets. Such evidence would help explain mechanisms that cannot be separated adequately through a single open-ended survey item.

Conclusion

This study examined how SMEs in Terengganu experience operating within an economy that remains closely connected to petroleum. The findings do not support a simple argument that petroleum dependency itself leads directly to poorer SME wellbeing. Instead, they identify perceived vulnerability to oil-price and fiscal volatility as the more consequential factor.

Dependency was negatively associated with wellbeing at the bivariate level but lost statistical significance when vulnerability was included in the regression model. Vulnerability remained a strong negative predictor, indicating that SME wellbeing is more closely associated with perceived exposure to instability than with recognition of petroleum dependency alone.

Economic diversification produced a different result. SMEs that perceived stronger diversification opportunities reported higher wellbeing, supporting the direct value of alternative markets and revenue sources. The evidence did not show that diversification

moderated the effects of dependency or vulnerability. H4 and H5 were therefore not supported. Diversification appears to contribute to wellbeing in its own right rather than functioning as a statistically demonstrated buffer against petroleum-related vulnerability.

The open-ended responses reinforce this interpretation. SME owners described uncertain oil-linked demand and state spending alongside cash-flow pressure, operating costs, market-access limitations, logistics costs, and difficulty expanding into non-oil markets. These accounts show that macroeconomic vulnerability reaches SMEs through ordinary business mechanisms rather than through petroleum involvement alone.

The study therefore extends the resource-dependency argument from the state economy to the businesses operating within it. The key distinction is between being economically dependent and feeling economically exposed. For Terengganu SMEs, the second condition is more closely associated with business wellbeing. Policy aimed at improving SME conditions should therefore pursue diversification while also reducing the uncertainty through which petroleum dependence affects local demand, public spending, business confidence, and firm planning.

Acknowledgements:	The authors would like to express their sincere gratitude to Universiti Teknologi MARA for providing the necessary resources and support throughout the course of this research. Special appreciation is extended to colleagues and peers who contributed valuable insights and constructive feedback, which greatly enhanced the quality of this paper.
Funding Statement:	No Funding
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 International Journal of Entrepreneurship and Management Practices (IJEMP)
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/06/2026 (PG/MR/343). 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:	Mohd Ariff Kamaludin and Mohamad Shukri Johari were responsible for the conceptualization, methodology, and overall supervision of the study. Irwan Ibrahim, Zaimy Johana Johan, and Norina Ahmad Jamil handled data collection, analysis, and interpretation of results. Norhasdalina Hasim, Anas Afandi Ahmad Apandi, and Nur Rahmas Mohd Saman contributed to the literature review, manuscript drafting, and critical revision. All authors read and approved the final version of the manuscript prior to submission. The corresponding author is Mohamad Shukri Johari.

International Journal of Entrepreneurship and Management Practices
IJEMP
EISSN : 2600-8750
Volume 9 Issue 35 (September 2026) PP. 775-814

References

Auty, R. M. (1993). *Sustaining development in mineral economies: The resource curse thesis*. Routledge.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16*(3), 297–334.

DagangNews. (2025, August 5). *Wang ehsan hampir RM5 bilion diagihkan kepada Terengganu, Kelantan walaupun tiada petroleum diperoleh – PM Anwar*. https://www.dagangnews.com/article/terkini/wang-ehsan-hampir-rm5-bilion-diagihkan-kepada-terengganu-kelantan-walaupun-tiada-petroleum-diperoleh-pm-anwar-55693

Department of Statistics Malaysia. (2022). *Gross domestic product (GDP) by state, 2022*. https://www.dosm.gov.my/portal-main/release-content/gross-domestic-product-gdp-by-state-

Department of Statistics Malaysia. (2025). *Gross domestic product (GDP) by state, 2025*. https://www.dosm.gov.my/portal-main/release-content/gross-domestic-product-gdp-by-state-2025

Doraisami, A. (2015). Has Malaysia really escaped the resource curse? A closer look at the political economy of oil revenue management and expenditures. *Resources Policy, 45*, 98–108.

East Coast Economic Region Development Council. (2024, October 3). *ECERDC secures RM3.1 billion in realised investments for Terengganu, creating 5,000 new jobs* [Media release]. https://www.ecerdc.com.my/media_releases/ecerdc-secures-rm3-1-billion-in-realised-investments-for-terengganu-creating-5000-new-jobs/

Free Malaysia Today. (2022, January 17). *What the Kelantan oil royalty issue is all about*. https://www.freemalaysiatoday.com/category/nation/2022/01/17/what-the-kelantan-oil-royalty-issue-is-all-about

Jamil, N. A., Ibrahim, I., Senathirajah, A. R. S., & Semawi, A. R. (2023). Environmental management practices (EMP) implementation in small and medium-size businesses. *International Journal of Professional Business Review, 8*(6), 1.

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement, 30*(3), 607–610.

Mohamed Senin, S., Juhdi, N. H., Che Omar, A. R., & Hashim, N. A. (2024). Small and medium enterprises survival during the global crises: A systematic review of theoretical perspectives of building resilience in the time of crisis. *Cogent Business & Management, 11*(1), 2395428.

Muhammad, A., Naidu, B. M., Sundram, V. P. K., Hussein, M. Z. S. M., Chew, L. L., Pillai, S. G., & Ibrahim, I. (2023). The role of logispreneurs in advancing waste management in Malaysia: Towards a sustainable reverse logistics and green future. *Information Management and Business Review, 15*(3), 222–228.

Rashid, M. F., et al. (2022). The impact of COVID-19 pandemic towards the resilience of small medium enterprises (SMEs) in Malaysia. *IOP Conference Series: Earth and Environmental Science, 1082*, 012001.

Saari, M. Y., Habibullah, M. S., Utit, C., & Maji, I. K. (2018). Economic impacts of petroleum industry in states of Pahang and Terengganu. *Jurnal Ekonomi Malaysia, 52*(2), 149–161.

Sachs, J. D., & Warner, A. M. (1995). *Natural resource abundance and economic growth* (NBER Working Paper No. 5398). National Bureau of Economic Research.

Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill-building approach* (7th ed.). Wiley.

Sufi, N. A. N., Pyeman, J., Ibrahim, I., Mutalib, S., Kamaruddin, K., & Rahman, N. (2025). Ensuring a sustainable supply chain: Retailers' response to food supply chain disruptions through the Integrated Supply Chain Resilience and Adaptation (ISCRA) framework. *International Journal of Research, 9*, 899–909.

The Edge Malaysia. (2013, May 16). *The oil royalty rumble*.