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TOWARD AN INTEGRATED MODEL OF SME NEW PRODUCT DEVELOPMENT CAPABILITY IN SOUTH AFRICA'S RETAIL SECTOR: A SYNTHESIS OF QUALITATIVE AND QUANTITATIVE FINDINGS

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ABSTRACT

This study investigates how small and medium enterprise (SME) suppliers in South Africa's buyer-dominated retail sector build and sustain new-product development (NPD) capability. Drawing on dynamic capabilities and signaling theory, the research uses a sequential mixed-methods design integrating quantitative survey data from 74 SME manufacturers with qualitative interviews from 20 listed suppliers. Quantitative results show that research-led validation -structured testing, documentation, and certification - was the only significant predictor of retailer listing success, indicating its central role in reducing information asymmetry and signaling reliability to dominant buyers. The qualitative findings extend these results by revealing that, after listing, SMEs face continuing capability-renewal pressures, including high compliance costs, compressed innovation cycles, and operational disruptions such as load-shedding and logistics constraints. Firms that embedded benchmarking, 4P documentation, and post-launch learning routines converted these challenges into adaptive feedback systems. The study conceptualises research-led validation as a micro-foundation of dynamic capability that transforms experiential learning into credible market signals. Practically, it proposes the Retail-Ready NPD Capability Model to guide managers and policymakers in strengthening SME innovation capability and sustainable inclusion in formal retail value chains.

KEYWORDS: SME Suppliers; Dynamic Capabilities; Signaling Theory; Research-Led Validation; New-Product Development; Emerging Markets; South Africa.

1. INTRODUCTION

South Africa's grocery retail sector remains one of the most structurally concentrated industries in the national economy, dominated by a small number of vertically integrated supermarket chains that exercise substantial buyer power and control over supplier access (Competition Commission South Africa, 2019). Structural consolidation has been reinforced through exclusive lease agreements and category-management practices, which often extend beyond ten-year terms and constrain smaller suppliers' ability to obtain shelf space (Competition Commission South Africa, 2019). Small and medium-sized enterprises (SMEs) operating in this environment face systemic capability and financing constraints - including informality, limited record-keeping, and working-capital shortages - that restrict their ability to comply with retailer procurement standards and participate effectively in modern value chains (OECD, 2022). Within these buyer-dominated supply chains, governance mechanisms and asymmetric power relations determine whether firm-level innovation capabilities translate into actual market access, thereby creating a persistent innovation-access gap (Mondliwa, Goga, and Roberts, 2021).

Recent evidence highlights that structured, research-driven innovation routines and cross-functional collaboration yield more consistent new-product outcomes than ad-hoc experimentation - particularly under institutional and market uncertainty (Audretsch, Belitski, Caiazza, and Phan, 2023; Žužek et al., 2021). Moreover, strengthening SMEs' dynamic capabilities through formalised NPD and validation processes improves their capacity to meet retailer expectations and sustain competitive advantage (Garrido-Prada, Romero-Jordan, and Delgado-Rodriguez, 2024). South Africa's industrial policy continues to prioritise inclusive value-chain participation and supplier upgrading as mechanisms for structural transformation and employment growth (Department of Trade, Industry and Competition [the dtic], 2023). Against this backdrop, the present study investigates the continuum between NPD capability and retail access by comparing non-listed SMEs seeking market entry with listed SMEs managing post-listing NPD within South Africa's grocery retail sector. This comparative design makes it possible to identify capability configurations and institutional factors that either facilitate or hinder SME integration into formal retail networks.

Accordingly, the study aims to compare and synthesise the NPD strategies of listed and non-listed

SMEs in South Africa's grocery retail sector to uncover organisational and institutional enablers of successful market entry. It further develops a Retail-Ready NPD Capability Framework that connects internal innovation routines with external retailer-acceptance mechanisms, thereby advancing theoretical understanding of SME competitiveness in buyer-dominated markets and offering policy-relevant insights for inclusive industrialisation. The study pursues four objectives:

1. To examine the strategic, research, and collaborative practices underpinning NPD among listed and non-listed SME suppliers.
2. To identify capability gaps, structural barriers, and alignment challenges influencing retailer acceptance of SME-developed products.
3. To integrate qualitative and quantitative findings into a unified Retail-Ready NPD Capability framework tailored to emerging-market retail ecosystems.
4. To propose theoretical and policy recommendations for enhancing SME innovation readiness, retailer engagement, and inclusive value-chain participation.

2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1. SME Innovation and Capability Formation

SMEs contribute disproportionately to innovation in emerging markets, yet their ability to commercialise new products depends on both internal capability configurations and external relational legitimacy (Sengura, Mu and Zhang, 2024). In buyer-dominated industries such as grocery retail, these firms face dual challenges: limited resource endowments and restricted visibility within procurement systems (Phongthiya et al., 2024). Consequently, innovation effectiveness rests not only on creative ideation but on a firm's capacity to validate its products through credible evidence of quality, demand, and compliance. Empirical studies emphasise that SMEs which institutionalise structured NPD routines - idea screening, testing, and documentation - achieve superior innovation outcomes (Oliveira et al., 2022). Conversely, informality in research and collaboration leads to fragmented learning and weak market translation (Anning-Dorson, 2024). Within the context of dominant retail buyers, validation mechanisms function as capability-based bridges linking innovation potential to supplier legitimacy and market access.

2.1.2. Theoretical Foundations

This research draws primarily on the Resource-Based View (RBV) and Dynamic Capabilities Theory (DCT) as its theoretical anchors. The RBV posits that sustained competitive advantage arises from resources that are valuable, rare, inimitable, and non-substitutable (VRIN) (Barney, Ketchen & Wright 2021). Within SMEs, such resources typically include technical expertise, market intelligence, and organisational routines that enable effective new product decisions and responsiveness to environmental shifts. The DCT extends the RBV by explaining how firms reconfigure resources through sensing, seizing, and transforming activities in turbulent markets (Teece 2020). In concentrated retail ecosystems, where dominant buyers control access and impose stringent listing requirements, these dynamic capabilities must take the form of documented and auditable processes that convey reliability and compliance (Kohtamäki et al. 2022; Gorton et al. 2024). Accordingly, this study conceptualises research-led validation as a micro-foundation of dynamic capability. It represents a structured approach to product and market testing that generates verifiable artefacts - benchmark reports, consumer-feedback syntheses, and technical documentation - which act as credible signals under information asymmetry and establish legitimacy with retailers (Bafera & Kleinert 2023; Thomas et al. 2021). While Dynamic Capabilities Theory (DCT) explains how firms sense and seize opportunities through reconfiguration of resources, this study conceptualises research-led validation not as a dynamic capability itself, but as one of its micro-foundations (Xie, Zhao, Liu, and Lu, 2023). These micro-foundations - structured testing, documentation, and certification - translate tacit learning into auditable evidence that signals reliability to powerful buyers (Cautela, Simoni, & Moran, 2021). Under the institutional constraints of South Africa's concentrated retail market, these validation routines operate simultaneously as capability enactments and legitimacy signals. This integration extends DCT by connecting it with Signaling Theory and Institutional Theory, illustrating how firms in buyer-dominated markets convert internal learning processes into credible proof of compliance and trustworthiness.

2.1.3. Capability Domains and Relationships

Prior SME innovation research consistently identifies three internal capability domains that underpin new product development success and relational legitimacy:

1. Strategic orientation - the extent to which an

entrepreneurial and market-driven posture guides NPD decisions. A proactive strategic orientation aligns product development with market intelligence and enhances buyer confidence (Pan, Oh & Wang 2021).

2. Internal collaboration - cross-functional coordination and information sharing that integrate insights across production, marketing, and supply functions. Collaborative cultures accelerate learning and ensure consistency in quality and delivery (Idrees et al. 2023).
3. NPD research capability (research-led validation) - the SME's ability to systematically collect, interpret, and codify market, consumer, and technical data. This capability transforms intangible learning into tangible, auditable proof of competence (Chen et al. 2023; Ruiz-Ortega et al. 2024).

In South Africa's retail supply chains, where buyer dominance amplifies information asymmetry, these three domains interact to shape relationship quality and subsequent retailer access. Strategic orientation and collaboration provide the strategic and relational foundation, while research-led validation serves as the evidentiary mechanism through which SMEs demonstrate readiness and reliability (Competition Commission South Africa 2019; Lu, Qi & Yu 2024).

2.1.4. Hypothesis Development

Building on RBV and DCT, the study proposes that SMEs possessing integrated configurations of strategic orientation, internal collaboration, and research-led validation will achieve higher retailer-relationship quality.

- H1: SMEs that govern NPD strategically report higher retailer-relationship quality.
- H2: The extent of research-led validation within SME NPD processes positively influences retailer-relationship quality.
- H3: The strength of cross-functional collaboration in SME NPD positively influences retailer-relationship quality.

Collectively, these hypotheses form the Retail-Ready NPD Capability Model, proposing that the alignment of these three internal capabilities strengthens SMEs' ability to establish legitimacy and secure retail access within concentrated market structures.

2.1.5. Conceptual Framework

Drawing from the Resource-Based View (RBV), Dynamic Capabilities Theory (DCT), and

Institutional perspectives, this study proposes a conceptual model (Figure 1) that links internal SME capabilities to retailer engagement outcomes within South Africa's grocery retail ecosystem. The model posits that Strategic Orientation, NPD Research Capability, Internal Collaboration, and Retailer Relationship Quality collectively determine SMEs' ability to secure and sustain retail access under asymmetric market conditions.

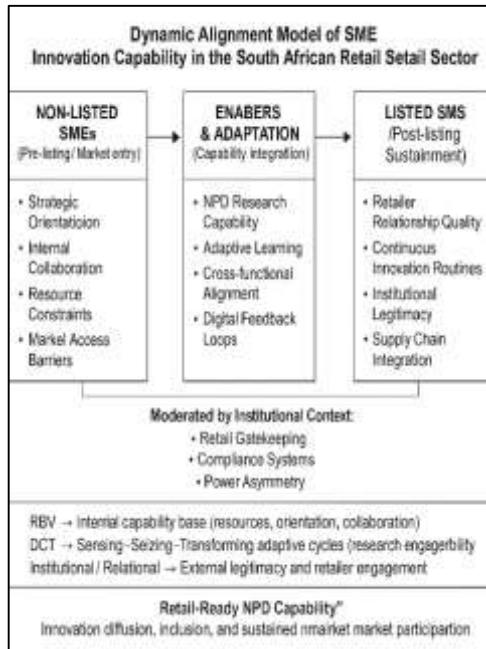


Figure 1: Conceptual Framework: Dynamic Alignment Model of SME Innovation Capability in the South African Retail Sector (Source: Own Compilation).

3. METHODOLOGY

3.1. Research Design

This study employed a sequential explanatory mixed-methods design, integrating quantitative and qualitative strands to examine how SMEs' internal capabilities influence their access to formal grocery-retail channels in South Africa. The quantitative phase identified predictors of successful retailer appointments among unlisted SMEs, whereas the qualitative phase explored how already-listed SMEs sustain new-product development (NPD) and manage relational dynamics under post-listing conditions (Shiyanbola, 2021). Integration occurred at two stages. First, quantitative results guided the design of the qualitative interview protocol, enabling the second phase to probe mechanisms underlying the observed statistical relationships. Second, meta-inference was achieved through the use of joint display logic, aligning quantitative findings and thematic patterns to identify convergence,

complementarity, and divergence (Haynes-Brown and Fetter, 2021; Peters and Fabbregues, 2024). This approach ensured methodological triangulation and enhanced explanatory power, consistent with best practice in explanatory mixed-methods research (Guetterman, Fabbregues, & Sakakibara, 2021; Arias Valencia, 2022).

3.2. Population And Sampling

3.2.1. Quantitative Phase

The quantitative phase targeted unlisted SME suppliers operating within South Africa's food and grocery sectors. The sampling frame comprised 92 enterprises registered with a major retailer's enterprise-development programme (June 2022 - November 2023). These SMEs had expressed interest in formal listing but had not yet secured supply contracts.

Using purposive sampling, all 92 firms were invited; 74 valid responses were received after repeated follow-ups. This represented about 80 % coverage of the accessible population, with a 5 % margin of error and 95 % confidence level (Raosoft sample calculator). Respondents met two inclusion criteria:

- Compliance with the South African SME definition (≤ 500 employees) (Enafoghe & Ramsuraj, 2023), and
- A managerial or operational role linked to NPD or retail engagement.

The demographic profile indicated that most respondents were male (56.8 %), aged 36-60 years (86.5%) and held tertiary qualifications (83 %). Over 83 % were in senior-management, director, or ownership roles, indicating informed perspectives on strategic decisions. A majority operated as private companies (52.7 %), followed by sole proprietorships (17.6 %) and close corporations (16.2 %).

3.2.2. Qualitative Phase

The qualitative phase examined listed SME suppliers to the same retailer to understand post-listing capability routines and relational practices. Twenty semi-structured interviews were conducted with owner-managers, managing directors, product developers, key-account managers, and executive managers across food (65%) and non-food (35 %) categories. Data saturation occurred around the 17th interview, but three additional sessions were included to ensure thematic completeness. Recruitment was voluntary. Several candidates declined participation owing to perceived conflict of interest, given the researcher's employment at the focal retailer - acknowledged as a limitation.

Confidentiality assurances and institutional ethics clearance mitigated potential bias. Purposive expert sampling was adopted to ensure participants possessed advanced knowledge of NPD processes and retail operations, aligning with contemporary guidance on participant selection in explanatory mixed-methods designs (Ahmad and Wilkins, 2024).

Ethical approval was granted by the North-West University Business School Research Ethics Committee, and all participants provided written informed consent.

3.2.3. *Instrumentation And Variables*

The survey instrument operationalised four latent constructs on a 4-point Likert scale (1 = strongly disagree; 4 = strongly agree):

1. Strategic orientation (SO) - Clarifies goals and channels resources toward NPD while preserving flexibility (Aloulou, 2019)
2. NPD research capability (NR) - entails formal market/competitor/customer inquiry plus documented technical and consumer testing (Iqbal & Suzianti 2021).
3. Internal collaboration (IC) - reflects purposeful cross-functional knowledge sharing that converts insights into viable products (Lindblom & Martins, 2022).
4. Retailer relationship quality (RR) - trust, communication, and commitment - are standard buyer - supplier quality metrics (Agarwal and Narayana 2020).

The dependent variable was ease of securing a retailer appointment, measured by respondents' self-reported rating of access success. Control variables included firm size and years in operation. The interview protocol for listed SMEs comprised semi-structured questions on post-listing adaptation, capability development in terms of NPD process, and retailer-supplier interaction dynamics. The average duration of the interview was 38 minutes and 25 Seconds. The interviews were audio-recorded and transcribed verbatim.

3.3. *Data Collection Procedures*

Survey data were gathered online via Google Forms between November 2023 and April 2024. Interview data were collected from April to June 2024 during in-person sessions. Participation was voluntary, with full rights of withdrawal at any point.

3.4. *Data Analysis*

Quantitative analyses were performed in SPSS v28. Exploratory Factor Analysis (EFA) using

principal-axis factoring with varimax rotation validated construct dimensionality ($KMO = 0.83$; Bartlett's $\chi^2 p < 0.001$). Items with communalities < 0.40 were removed. Cronbach's α ranged 0.63-0.90 (majority > 0.80). Multiple regression tested H1-H3 while controlling for firm size and age. Model adequacy was assessed via R^2 and F-statistics. Qualitative data were analysed thematically using ATLAS.ti, following the six-step framework of Naeem et al. (2023): open coding, axial grouping, and pattern matching. Quantitative and qualitative findings were integrated using a side-by-side comparison and data-transformation approach, mapping qualitative themes onto quantitative constructs to identify convergence and expansion (Guetterman, Fàbregues, & Sakakibara, 2021).

3.5. *Validity And Reliability*

Instrument quality was supported through multiple checks. Content validity was established via expert review and a small pilot, refining item wording and sequencing. Construct validity was examined with exploratory factor analysis (EFA): sampling adequacy (KMO), Bartlett's test, factor retention ($eigenvalues > 1$ and parallel reasoning), and loading thresholds (≥ 0.50) followed current recommendations (Goretzko, Pham, and Bühner, 2021). Convergent and discriminant validity were judged via AVE (≥ 0.50) and inter-construct correlations, respectively (Goretzko, Pham, and Bühner, 2021). Reliability was assessed with Cronbach's α (≥ 0.70 acceptable; ≥ 0.80 good), noting that α can be attenuated for two-item subscales and should be interpreted alongside item diagnostics (Goretzko, Pham, and Bühner, 2021). For the qualitative strand, transparency of thematic analysis procedures (six-step coding, audit trail, peer debriefing) and thick description were used to enhance credibility, dependability, and confirmability (Kiger and Varpio, 2020).

3.6. *Ethical Considerations*

Ethical clearance was obtained from the North-West University Research Ethics Committee (Ref: NWU-00574-20-A4). All participants provided informed consent, and data were anonymised and stored securely in accordance with institutional and GDPR-aligned protocols.

4. RESULTS AND ANALYSIS

4.1. *Descriptive Statistics and Sample Profile*

The quantitative dataset comprised 74 unlisted SMEs drawn from South Africa's food, beverage, and personal-care subsectors. Most firms were micro- to

small-sized: 84 % employed \leq 50 workers, and 86 % of respondents were between 36 and 60 years old. Over four-fifths of owner-managers held tertiary qualifications and were directly involved in NPD decisions. The qualitative sample of 20 listed SME suppliers reflected comparable sectoral representation but higher formalisation levels, including in-house quality-assurance and R&D functions. Preliminary correlation analysis showed strong positive associations between Strategic Orientation (SO) and NPD Research Capability (NR) ($r \geq 0.50$), suggesting alignment between entrepreneurial posture and evidence-based learning. In contrast, Internal Collaboration (IC) and Retailer-Relationship (RR) constructs showed weaker or more variable correlations ($r < 0.30$), indicating that while SMEs exhibit structured planning and research practices, cross-functional coordination and sustained retailer integration

remain inconsistent.

These descriptive results suggest that strategic and analytical readiness are comparatively mature capabilities, whereas relational and integrative routines lag behind - consistent with evidence that SMEs in emerging markets face constraints implementing supply-chain integration and relationship routines, and that such integration is critical to performance. (Setyaningsih & Kelle, 2021; Das Nair, 2021; Wang et al., 2024; Zahoor et al., 2024).

4.2. Factor Analysis and Reliability

Exploratory factor analysis confirmed the multidimensional structure of the study constructs. Sampling adequacy was satisfactory (KMO values = 0.81-0.83; Bartlett's Test $p < 0.001$), and all communalities exceeded 0.40, indicating factorability as shown in Table 1.

Table 1: Exploratory Factor Analysis and Reliability Summary (n = 74).

Construct	Items Retained	Eigenvalue	Variance Explained (%)	Cronbach's α	KMO	Communality Range	Retained Sub-Factors (Conceptual Dimensions)
Strategic Orientation	11	4.12, 2.01, 1.17	75.45	0.82	0.82	0.62-0.86	(1) Strategic Planning Culture (2) Goal Visibility & Internal Alignment (3) Structured Evaluation & Prioritisation
NPD Research Capability	12	3.96, 2.18, 1.22	70.17	0.81	0.81	0.45-0.89	(1) Customer-Centric Discovery (2) Evidence-Based Validation (3) Structured R&D Investment
Internal Collaboration Dynamics	10	3.41, 1.11	65.27	0.83	0.83	0.49-0.75	(1) Inclusive Collaboration (2) Strategic-Operational Synchronisation
Retailer-SME Relationship Barriers	10	3.82, 2.10, 1.12	70.91	0.81	0.81	0.51-0.84	(1) Retailer Relationship Climate (2) Accessibility & On-boarding Barriers (3) Supplier Initiative & Coping Tactics
Cumulative Variance Explained	-	-	71.38	-	-	-	-

*Note: Extraction = Principal Axis Factoring; Rotation = Varimax With Kaiser Normalization; Retention Criteria = Eigenvalues > 1, Communalities > 0.40. All Loadings $\geq .50$.
(Source: Own Compilation).*

Using Principal Axis Factoring with Varimax rotation, four clean constructs emerged, explaining 71.38% of total variance. Each construct exhibited high internal consistency (Cronbach's α = 0.81-0.83). SO and NR Capability displayed the strongest structural coherence (variance explained = 75.45% and 70.17%, respectively), while IC and RR factors showed more moderate cohesion (65.27% and 70.91%). The four constructs jointly explained 71.4 % of total variance with high reliability (α = 0.81-0.83). These validated factors provided the foundation for regression and subsequent mixed-methods integration.

4.3. Hypothesis Testing

Multiple regression analysis examined the joint

influence of NPD Strategy, NPD Research, and Team Collaboration on SMEs' ease of securing retailer appointments.

Table 2: Regression Analysis Summary.

Model	Predictors Entered	R ²	Adjusted R ²	F	P
1	NPD Strategy, NPD Research, Team Collaboration	0.234	0.202	7.17	0.001
2	+ Firm Size, Years in Business	0.270	0.216	5.03	0.001

Note: Dependent Variable = Ease Of Securing Retailer Appointment; N = 74. (Source: Own Compilation).

Model 1 (without controls) explained 23.4 % of the variance ($R^2 = 0.234$, Adj. $R^2 = 0.202$), while Model 2 (including firm size and years in company) improved explanatory power to 27.0 % ($R^2 = 0.270$, Adj. $R^2 = 0.216$; $F(5, 68) = 5.03$, $p = 0.001$). Among predictors, NPD Research showed a significant positive effect ($\beta = 0.61$, $p < 0.05$), confirming that firms engaging in systematic market and customer research gain greater retailer access (see Table 2). NPD Strategy ($\beta = -0.12$, $p > 0.4$) and Team Collaboration ($\beta = 0.20$, $p > 0.4$) were not significant, suggesting that strategic alignment and cross-functional coordination alone do not directly improve retailer engagement outcomes. Control variables were non-significant, indicating that evidence-based product validation - rather than scale or tenure - drives retailer access. This aligns with research showing that formalized evaluations and third-party certifications function as credible signals that mitigate buyer risk in concentrated retail supply chains (Hawkins, Gravier, & Muir, 2020; Tong, Lai, Lo, & Cheng, 2022).

4.4. Qualitative Insights: Post-Listing Adaptation and Capability Institutionalisation

Across the interviews, the SME suppliers described opportunity within constraint: retailer listing confers visibility but also intensifies scrutiny and cost pressures; enterprise/supplier-development checks establish entry legitimacy yet rarely guarantee sustained access (see Table 3). This pattern is consistent with evidence that retailers use third-party evaluations to legitimate selective gatekeeping in concentrated grocery chains (Gorton et al., 2024). Suppliers also highlighted structural barriers to innovation - high NPD costs, compressed evaluation windows, opaque buyer processes, and rising trading terms -echoing documented "dark-side" effects of buyer power and information asymmetry that depress small-supplier outcomes (Glavee-Geo, Engelsseth, & Buvik, 2021).

Table 3: Summary Of Thematic Findings Among Listed SME Suppliers.

Theme	Subthemes	Illustrative Insights (insert direct quotes)	Interpretation / Theoretical Link
1. Opportunity within Constraint	- Listing enhances visibility but amplifies cost and competition. - Retailer ESD grants access but not sustainability.	"We made sure we are legally compliant, had our factory audited and had all the necessary documentations ready" (P11) "We send the samples to labs for testing and apply them with SAPHRA" (P15) "Food safety certification is needed" (P2)	This reflects positional legitimacy: listing functions as symbolic capital under structural power asymmetry in buyer-dominated supply chains (Zomorrodi & Fayezi, 2022).
2. Structural Barriers to Innovation	- High NPD cost and compliance overheads. - Limited shelf space and short product evaluation cycles. - Opaque buyer relations and rising trading terms.	"sending them to labs for Nutri and shelf life. Same time we test stability.." "very high NPD costs" (P20) "thousands of small suppliers knocking on their doors and they have limited shelf space" (P18) "They also keep increasing their trading terms every year and they expect us to keep prices down" (P1)	Demonstrates coercive institutional pressures and relational dependency (Glavee-Geo et al., 2022).
3. Environmental and Operational Disruptions	- Load-shedding, transport costs, and raw-material shortages. - Dependence on imported machinery and expertise.	"We also have loadshedding affecting production time and cost. From the retailer side, we have many issues like cost of transportation is very high, and retailer orders in small batches many times a week because they don't want to keep high levels of stock but this affects our logistics costs" (P4) "we didn't find get the needed machinery parts to continue with development and importing it was too expensive" (P14)	These disruptions illustrate the systemic fragility of emerging-market innovation ecosystems, shaped by infrastructural instability and institutional voids (Temouri, 2022).
4. Organisational Adaptation and Learning	- Benchmarking and vicarious global learning. - 4P documentation and process discipline. - Communication, collaboration, and failure learning.	"We do benchmark of our factory sample against the market" (P17) "Once we analyse...we go into 4P document" (P15) "we basically take learnings from the launch" (P11)	Shows micro-foundations of dynamic capability through procedural learning (Teece, 2020, p. 7; Bertello et al., 2022).

5. Relational Leverage and Private-Brand Learning	<ul style="list-style-type: none"> - Networking for access and legitimacy. - Private-label contracts as stability anchors. 	<p><i>"Having network of people..helped us with retailer" (P20)</i> <i>"the retail people are helpful with... with their private brand products"</i> (P19)</p>	Represents borrowed legitimacy and relational learning loops (Glavee-Geo et al., 2022).
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(Source: Own compilation).

Environmental and operational disruptions - notably load-shedding, transport costs, and input shortages - further erode feasibility, matching recent South African evidence on energy and logistics shocks to SME performance (Muridzi & Dhliwayo, 2023). In response, firms lean on organisational adaptation and learning (benchmarking, 4P documentation, staged testing, "learning from failures"): these are precisely the disciplined feedback loops that convert ad-hoc creativity into reliable routines (Wynn & Maier, 2022). Finally, relational leverage -networking to secure meetings and working on private-label briefs - serves as "borrowed legitimacy," giving smaller suppliers procedural guidance and credible signals to buyers, a dynamic consistent with recent accounts of retailer-controlled social evaluations and supplier signaling (Gorton et al., 2024; Glavee-Geo et al., 2021).

4.5. Integrated Analysis and Conceptual Model Development

The integration of quantitative and qualitative strands followed a sequential explanatory logic. Statistical results defined significant predictors, while qualitative insights illuminated underlying mechanisms. Integration was achieved through side-by-side comparison and data transformation, mapping qualitative codes to quantitative constructs to detect convergence and complementarity (Guetterman & Fetters, 2021; Peters & Fàbregues, 2024).

Quantitatively, NPD Research Capability emerged as the dominant predictor of retailer access; qualitatively, suppliers emphasised testing, certification, and compliance documentation as prerequisites for legitimacy. Together, these findings confirm that SME competitiveness in concentrated retail markets depends less on innovation intent and more on verifiable capability routines. This pattern refines Dynamic Capabilities Theory by identifying research-led validation as the operative micro-foundation that transforms tacit learning into external credibility. It also aligns with signaling theory, where certification and documentation reduce buyer uncertainty (Bafera & Kleinert, 2022).

The resulting Retail-Ready NPD Capability Model (Figure 2) depicts a feedback cycle:

- Strategic orientation and internal collaboration enhance research capability.

- Research-led validation generates relational credibility that drives retailer access.
- Retailer feedback reinforces capability learning, institutionalising innovation routines over time.

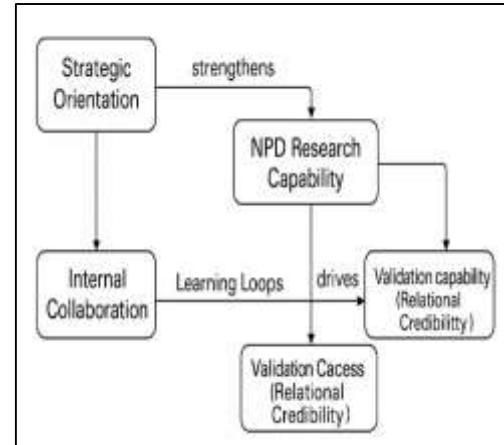


Figure 1: Conceptual Framework: Dynamic Alignment Model of SME Innovation Capability in the South African Retail Sector (Source: Own Compilation).

5. DISCUSSION AND CONCLUSION

5.1. Theoretical Interpretation

The results show that research-led validation- not strategic orientation or collaboration alone- distinguishes SMEs that secure retailer access from those that do not. Although the quantitative findings reveal significant associations, the cross-sectional design limits causal inference. The observed relationships should therefore be interpreted as indicative patterns rather than definitive cause-effect dynamics. In highly institutionalised, buyer-dominated markets, competitive advantage depends on the auditable demonstration of internal capabilities. This refines RBV and DCT by focusing on observable micro-routines such as testing, certification, and documentation that reduce perceived buyer risk (Barney, Ketchen & Wright, 2021; Teece, 2020). These structured validation mechanisms operationalise sensing and seizing into externally verified learning (Wynn & Maier, 2022), reinforcing legitimacy through credible signals (Bafera & Kleinert, 2022).

The qualitative phase revealed that listed SMEs face persistent innovation constraints despite achieving formal retail access. Themes such as

Opportunity within Constraint and Structural Barriers to Innovation show that listing confers symbolic legitimacy but amplifies compliance intensity, cost exposure, and dependence on retailer processes (Flankegård, Granlund, and Johansson, 2021). From a dynamic-capabilities perspective, this indicates a transition from capability acquisition to capability renewal - firms must continuously sense and adapt to shifting buyer requirements while absorbing shocks from power asymmetry and operational disruptions (Flankegård, Granlund, and Johansson, 2021). The Organisational Adaptation and Learning theme demonstrates that benchmarking, documentation, and post-launch reviews become vital feedback loops through which these suppliers attempt to stabilise performance under ongoing institutional pressure.

5.2. Empirical Contribution

The sequential integration of quantitative and qualitative strands offers a multi-layered understanding of SME new-product capability formation. The quantitative analysis established that research-led validation was the only statistically significant predictor of retailer access, while strategic orientation and internal collaboration, though correlated, were not direct drivers of appointment success. The subsequent qualitative phase clarified why this pattern emerged.

Interview themes such as Opportunity within Constraint and Structural Barriers to Innovation revealed that formal testing, certification, and documentation operate as credibility signals that reduce buyer uncertainty - explaining the statistical strength of the validation variable. At the same time, the qualitative evidence from Organisational Adaptation and Learning and Relational Leverage showed that, once listed, SMEs struggle to sustain these validation routines under escalating compliance and cost pressures. This extends the quantitative insight from a static correlation into a dynamic capability cycle, in which validation enables access but must evolve into continuous learning to preserve legitimacy.

Together, the two strands demonstrate that SME competitiveness unfolds across two capability stages:

1. Access capability, where structured research and documentation transform innovation intent into credible proof; and
2. Sustainment capability, where iterative feedback, benchmarking, and collaborative learning allow firms to maintain retailer confidence under power asymmetry.

By integrating numerical relationships with

contextual mechanisms, the study advances evidence on how micro-level validation routines mediate the broader link between innovation capacity and market inclusion. This joint interpretation exemplifies the explanatory power of mixed-methods design in uncovering both statistical regularities and the institutional processes that produce them.

5.3. Managerial Implications

The findings indicate that structured validation-market tests, sensory trials, certification, and documentation - functions as a strategic legitimacy asset rather than an administrative burden. SME owner-managers should institutionalise evidence-based NPD routines and treat compliance data as dynamic learning inputs. Building internal audit trails and third-party certifications enhances credibility with dominant retailers and signals risk-reduction capability. Retailers, in turn, should adopt tiered onboarding frameworks that recognise SMEs at different stages of validation maturity, providing mentoring and feedback loops rather than one-time audits. Entrepreneurship-support and enterprise-development programmes should shift focus from generic training to applied research design, consumer validation, and data documentation competencies.

For already-listed suppliers, the findings underscore the importance of converting ad-hoc compliance into institutionalised capability systems. The use of 4P documentation, internal benchmarking, and failure-learning routines observed in the qualitative phase should be formalised as part of periodic NPD audits. Managers should negotiate longer evaluation windows and joint innovation reviews with retail buyers to ease the compression of development cycles. Investing in collaborative product trials and shared data access can transform dependency into co-learning, improving both NPD agility and relational trust.

5.4. Policy Recommendation

The findings align with South Africa's National Development Plan goal of inclusive industrialisation by advocating capability-based interventions. Policy should prioritise shared research infrastructure (such as the accredited labs, certification assistance, and consumer panels) and track capability formation metrics - number of validated tests, certification milestones, or documented quality-assurance cycles - rather than financial outputs alone (Barney et al., 2021; Wynn & Maier, 2022). Policy frameworks should also address the post-listing capability fatigue

evident among small suppliers. Support mechanisms such as renewal grants for certification costs, subsidised lab access, or co-funded retailer-SME innovation pilots would help sustain the compliance and testing routines required to remain listed.

5.5. Research Agenda and Theoretical Contribution

The study extends Dynamic Capabilities Theory by identifying research-led validation as a micro-foundation that transforms experiential learning into externally credible proof of reliability. By linking DCT with Signaling Theory, it demonstrates how observable validation routines mitigate buyer risk perceptions in concentrated markets. This contributes to the emerging literature on capability signaling in institutional voids. Future research could adopt longitudinal or dyadic designs to examine how validation investments influence relational trust and market outcomes over time. Comparative studies across sectors- such as apparel, pharmaceuticals, and agriculture - could test the generalisability of the Retail-Ready NPD Capability Model across different institutional logics.

5.6. Limitations and Future Research

Generalisability is limited to grocery retail. Cross-sector replication (e.g., apparel, pharmaceuticals) could test whether validation-as-capability generalises to other buyer-dominated systems. Longitudinal work could track pre- and post-listing evolution to capture feedback between legitimacy and capability investment. Incorporating retailer perspectives could measure how supplier validation signals alter perceived risk (Bafera & Kleinert, 2022).

7. CONCLUSION

This study set out to explain how South African SME suppliers build and sustain new-product development (NPD) capability within a highly concentrated retail environment. Through the integration of quantitative and qualitative evidence, the research demonstrates that research-led validation - the structured generation of technical, customer, and compliance evidence - functions as the decisive bridge between innovation intent and retailer access. Quantitatively, this capability emerged as the only significant predictor of retailer appointment success, underscoring that in buyer-dominated systems, market entry depends less on entrepreneurial orientation or teamwork alone, and more on the verifiable credibility of NPD processes.

Qualitative insights extended these findings by revealing that even after achieving listing, SMEs

continue to face capability renewal challenges. The interviews with listed suppliers exposed enduring barriers such as high validation and compliance costs, restricted shelf space, load-shedding disruptions, and retailer-driven development timelines. These pressures transform listing from a milestone into an ongoing test of resilience. Firms that institutionalise documentation, benchmarking, and failure-learning routines - such as the 4P reviews observed in this study- convert these constraints into dynamic learning systems. Those that do not, experience "innovation fatigue," struggling to sustain new product pipelines under intensified buyer scrutiny and operational volatility.

Synthesising both strands, the study identifies a two-stage capability pathway:

- Access Capability - where evidence-based validation routines enable SMEs to demonstrate reliability and overcome information asymmetry to secure retail listing; and
- Sustainment Capability - where continuous adaptation, cost management, and relational learning allow listed SMEs to retain legitimacy and maintain innovation momentum post-listing.

Theoretically, these findings refine the Dynamic Capabilities Theory by grounding it in observable micro-foundations - testing, certification, and documentation - that not only reconfigure resources but also operate as signals of trustworthiness under institutional constraints. The research also bridges Signaling Theory and Institutional Theory by illustrating how structured validation routines reduce perceived buyer risk and legitimate SME participation in formal value chains.

Practically, the results imply that sustainable SME inclusion requires capability support that extends beyond initial onboarding. Retailers and policymakers should co-develop mechanisms that offset the compliance burden of small suppliers- through shared testing facilities, tiered onboarding frameworks, and post-listing innovation audits. For SME managers, the lesson is clear: in modern retail ecosystems, competitiveness rests not merely on creativity or intent but on the evidence of capability-on proof, not promise.

In sum, the study contributes a Retail-Ready NPD Capability Model that integrates dynamic capabilities, signaling, and inclusive-industrialisation perspectives to explain how SMEs convert learning into legitimacy and legitimacy into sustained market access. It redefines success in emerging-market retail not as the achievement of

listing, but as the continuous renewal of capability and credibility within complex, buyer-dominated systems.

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Ronnie Lotriet: Supervision, methodological guidance, critical review, and editing.

Both authors contributed to the study design, interpretation of data, and approval of the final manuscript and agree to be accountable for all aspects of the work, in line with ICMJE guidelines

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