

International Journal of Entrepreneurship and Project Management (IJEPM)

**Combined Effect of Entrepreneurial Competencies, Absorptive Capacity and
Intellectual Property Policy on the Performance of Manufacturing SMEs in Nairobi
County Kenya**

Rose. A. Mboya, Evans. V. Sagwa, Pamela. A. Mreji and Hezron. M. Osano

**Combined Effect of Entrepreneurial Competencies,
Absorptive Capacity and Intellectual Property Policy
on the Performance of Manufacturing SMEs in
Nairobi County Kenya**



¹*Rose A. Mboya

PhD, Entrepreneurship Candidate, Department of
Business and Management Studies, Technical University
of Kenya



²Prof. Evans Vidija Sagwa, PhD

Associate Professor, Department of Business and
Management Studies, Technical University of Kenya



³Dr. Pamela Adhiambo Mreji

Lecturer, Department of Business and Management
Studies, Technical University of Kenya



⁴Dr. Hezron Mogaka Osano, PhD

Senior Lecturer, Department of Business and
Management Studies, Technical University of Kenya

Article History

Received 11th August 2026

Received in Revised Form 8th September 2026

Accepted 5th October 2026



How to cite in APA format:

Mboya, R., Sagwa, E., Mreji, P., & Osano, H. (2026). Combined Effect of Entrepreneurial Competencies, Absorptive Capacity and Intellectual Property Policy on the Performance of Manufacturing SMEs in Nairobi County Kenya. *International Journal of Entrepreneurship and Project Management*, 11(1), 64–95. <https://doi.org/10.47604/ijepm.3996>

Abstract

Purpose: This study examined the combined effect of entrepreneurial competencies, absorptive capacity and intellectual property policy on the performance of manufacturing small and medium enterprises (SMEs) in Nairobi County, Kenya. Intellectual property policy was operationalized at firm level through the generation, protection and strategic utilization of six intellectual property mechanisms: patents, trademarks, industrial designs, copyright, utility models and trade secrets.

Methodology: A descriptive research design employed a quantitative approach that provided a comprehensive analysis of the relationships under study. The target population comprised 590 manufacturing SMEs in Nairobi County drawn from four sectors: food and beverage processing, cosmetics and detergents, leather and leather goods, and metal fabrication. Data was collected from SMEs from Nairobi County Kenya.

Findings: Using data from 202 manufacturing SMEs, hierarchical multiple regression was estimated using a composite SME Performance Index based on innovation rate, sales turnover, market share and profitability. The final model was statistically significant, $R^2 = .410$, adjusted $R^2 = .401$, $F(3, 198) = 45.87$, $p < .001$. Intellectual property policy emerged as the strongest unique predictor ($B = .387$, $\beta = .523$, $p < .001$), followed by entrepreneurial competencies ($B = .251$, $\beta = .236$, $p = .002$), while absorptive capacity did not make a statistically significant unique contribution after the other capabilities were controlled ($B = -.019$, $\beta = -.018$, $p = .797$). The findings indicate that entrepreneurial action and knowledge absorption are insufficient for superior performance unless SMEs possess mechanisms for protecting and capturing value from knowledge.

Unique Contribution to Theory, Practice and Policy: The study extends the Knowledge-Based View and Knowledge Spillover Theory of Entrepreneurship by linking knowledge access, entrepreneurial agency, leadership-enabled capability development and IP-based value appropriation within an integrated SME performance architecture.

Keywords: *Entrepreneurial Competencies, Absorptive Capacity, Intellectual Property Policy, Manufacturing Sector, SMEs Performance*

JEL Classification: L26, O32, O34, L60, M13

©2026 by the Authors. This Article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0>)

INTRODUCTION

Small and medium enterprises (SMEs) play an important role in employment creation, innovation, industrial development and economic growth. However, superior SME performance rarely results from a single organizational resource or capability. Manufacturing SMEs must continuously identify viable business opportunities, acquire and interpret relevant knowledge, coordinate people and processes, transform knowledge into commercially useful products and processes, protect valuable intellectual outputs, and capture value in competitive markets. These functions span several organizational capability domains and may be unevenly developed within individual enterprises.

Three capability domains are particularly important in explaining this process: entrepreneurial competencies, absorptive capacity and intellectual property assets. Entrepreneurial competencies encompass the knowledge, skills and behaviour that enable entrepreneurs and owner-managers to identify opportunities, establish strategic networks, exercise leadership and promote organizational learning (Al Koliby et al. (2024a). These competencies influence how firms recognize market possibilities, mobilize resources and respond to changes in their operating environment. In manufacturing SMEs, where managerial and strategic decisions are frequently concentrated in the owner-manager, entrepreneurial competencies can be particularly important in shaping enterprise direction and performance (Man et al., 2002)

Absorptive capacity complements entrepreneurial competencies by providing the organizational capability required to recognize, acquire, assimilate, transform and exploit external knowledge. Manufacturing SMEs increasingly depend on knowledge originating outside their organizational boundaries, including information from customers, suppliers, competitors, universities, research institutions and technology providers. Access to such knowledge, however, does not automatically improve enterprise performance. Firms must possess the internal capacity to interpret, integrate and apply externally acquired knowledge to product development, process improvement, innovation and market opportunities (Cohen & Levinthal, 1990; Zahra & George, 2002).

Intellectual property assets provide a further strategic capability through which SMEs can protect and appropriate value from knowledge and innovation. Patents, utility models, trademarks, industrial designs, copyright and trade secrets can enable enterprises to protect technological solutions, proprietary knowledge, product designs and market identity. Beyond their protective function, intellectual property assets may facilitate commercialization, product differentiation, market positioning and competitive advantage when they are strategically integrated into business operations (Willoughby, 2025; Wang et al., 2025).

Recent studies reinforce the importance of examining these capability domains within a broader organizational framework. Al Koliby et al. (2024a) associate entrepreneurial competencies with innovation and sustainable performance among manufacturing SMEs, while Al Koliby et al. (2024b) demonstrate connections between entrepreneurial competencies, knowledge management and sustainable performance. Changalima et al. (2025) show that technological absorptive capacity contributes to SME performance through e-business innovation, illustrating the importance of converting acquired knowledge into organizational applications. Similarly, Lohrey and Willoughby (2025) emphasize the strategic contribution of intellectual property management to SME innovation, competitiveness and business performance.

Taken together, these capability domains suggest an interconnected knowledge-to-performance architecture. Entrepreneurial competencies enable firms to sense opportunities, mobilize resources and initiate strategic action. Absorptive capacity enables firms to acquire, process and apply relevant external knowledge. Intellectual property assets enable enterprises to protect commercially valuable knowledge and innovation and enhance their capacity to appropriate value. From the perspective of the Knowledge-Based View (KBV), these capabilities can therefore be understood as distinct but interconnected mechanisms through which knowledge is transformed into enterprise performance.

Kenya's manufacturing SME sector provides an appropriate setting for examining this capability architecture. Enterprises engaged in food and beverage processing, cosmetics and detergents, leather and leather goods, and metal fabrication depend on varying combinations of entrepreneurial judgement, technical and market knowledge, production know-how, innovation, branding, product design and intellectual property protection. Manufacturing makes the knowledge-to-value process particularly visible because enterprise performance depends on transforming knowledge, skills and ideas into products, production processes, market positions and financial outcomes.

Against this background, this study examines the combined effect of entrepreneurial competencies, absorptive capacity and intellectual property assets on the performance of manufacturing SMEs in Nairobi County, Kenya. SME performance is conceptualized through four dimensions: innovation rate, sales turnover, market share and profitability. Using data from 202 manufacturing SMEs, the study determines the extent to which the three capability domains collectively explain SME performance and establishes their respective contributions when considered simultaneously. In doing so, the study provides an integrated perspective on the managerial, knowledge-processing and knowledge-appropriation capabilities underlying manufacturing SME performance.

Statement of the Problem

Small and medium enterprises (SMEs) are widely recognized as important contributors to employment creation, innovation, industrial development, and economic growth. Despite this significance, sustaining SME performance remains a persistent challenge. Globally, SMEs face substantial risks of business failure, particularly during the early stages of operation, with weaknesses in managerial capabilities, access to knowledge, innovation, finance, markets, and other strategic resources contributing to poor performance and business discontinuation (Yahaya & Nadarajah, 2023). These challenges are also evident in African economies, where SMEs operate in resource-constrained and institutionally complex environments that can limit their capacity to translate entrepreneurial initiatives into sustained business performance. Evidence from South Africa, for example, indicates particularly high levels of small-business failure, while studies from other African contexts similarly demonstrate persistent challenges to SME survival and growth (OECD, 2022; Zongo, 2024).

The problem is particularly important in Kenya, where SMEs constitute a major component of the economy but continue to experience considerable performance and survival challenges. The Kenya National Bureau of Statistics (KNBS, 2016) reported that approximately 46.3% of MSMEs closed within their first year of operation. Such business mortality suggests that enterprise creation alone does not guarantee sustainability and raises an important question regarding the firm-level capabilities and strategic resources that enable some SMEs to achieve superior performance while others struggle to survive. For manufacturing SMEs, the challenge

is particularly consequential because these enterprises must simultaneously identify market opportunities, acquire and utilize technological and market knowledge, innovate, protect commercially valuable knowledge, and convert these capabilities into sales, profitability, market share, and innovation outcomes.

Entrepreneurial competencies have consequently received increasing attention as potential determinants of SME performance. Competencies such as opportunity identification, networking, leadership, and organizational learning can enable entrepreneurs to recognize opportunities, mobilize resources, coordinate organizational activities, and respond to changing market conditions. Empirical studies generally demonstrate a positive relationship between entrepreneurial competencies and SME performance (Al Koliby et al., 2024a; Kisubi et al., 2022). However, possession of entrepreneurial competencies does not necessarily ensure that firms can effectively acquire, assimilate, transform, and exploit external knowledge. This creates an important explanatory gap because SMEs may possess capable entrepreneurs while lacking the organizational mechanisms required to convert external knowledge into commercially valuable outcomes.

Absorptive capacity therefore provides a potentially important link between entrepreneurial capability and enterprise performance. It enables firms to recognize, assimilate, transform, and exploit externally generated knowledge for innovation and competitive advantage (Cohen & Levinthal, 1990; Zahra & George, 2002). Recent studies have demonstrated the performance relevance of absorptive capacity in SMEs (Changalima et al., 2025; Jallad & Karadas, 2024). Nevertheless, existing evidence remains inconclusive regarding whether absorptive capacity independently enhances SME performance or primarily operates in conjunction with other organizational capabilities. More importantly, limited empirical attention has been given to how entrepreneurial competencies and absorptive capacity operate simultaneously within manufacturing SMEs in developing-economy contexts such as Kenya.

A further limitation concerns the role of intellectual property assets. Even where SMEs successfully identify opportunities and acquire and apply new knowledge, improved performance may depend on their ability to appropriate the economic value generated from that knowledge. Patents, utility models, industrial designs, trademarks, copyright, and trade secrets provide different mechanisms through which firms can protect innovation, differentiate their products, control imitation, strengthen market positioning, and capture value from knowledge-based resources. Evidence increasingly associates intellectual property ownership and protection with firm performance and competitive advantage (European Patent Office & European Union Intellectual Property Office, 2025; Lohrey & Willoughby, 2025; Wang et al., 2025). However, much of the existing literature examines intellectual property independently of the entrepreneurial and knowledge-processing capabilities that generate and exploit commercially valuable knowledge.

Consequently, the existing literature remains fragmented. Studies have separately examined entrepreneurial competencies and performance, absorptive capacity and performance, and intellectual property and firm outcomes, but comparatively limited empirical evidence explains their combined contribution to SME performance. This fragmentation is theoretically important because entrepreneurial competencies, absorptive capacity, and intellectual property assets represent related but distinct stages in the knowledge-to-value process. Entrepreneurial competencies facilitate the identification and mobilization of opportunities; absorptive capacity enables firms to acquire and transform external knowledge; and intellectual property assets

provide mechanisms through which commercially valuable knowledge can be protected and appropriated. Examining any one of these capabilities independently may therefore provide an incomplete explanation of SME performance.

The gap is particularly pronounced in the Kenyan manufacturing context. Existing studies provide insufficient empirical evidence on whether entrepreneurial competencies, absorptive capacity, and intellectual property assets retain independent effects when considered simultaneously and the extent to which their combined explanatory power accounts for variations in manufacturing SME performance. Furthermore, evidence remains limited on whether intellectual property assets strengthen the performance benefits associated with entrepreneurial competencies. This is important because the possession of entrepreneurial competencies may generate greater economic value where the resulting innovations, brands, designs, technological solutions, creative outputs, and proprietary knowledge are effectively protected and commercially exploited.

This study therefore addresses an important empirical, theoretical, and contextual problem by examining the combined effects of entrepreneurial competencies, absorptive capacity, and intellectual property assets on the performance of manufacturing SMEs in Nairobi County, Kenya. Specifically, it investigates whether entrepreneurial competencies, absorptive capacity, and intellectual property assets make distinct contributions to performance when considered within an integrated model. By doing so, the study moves beyond isolated capability–performance relationships and provides a more comprehensive explanation of how opportunity-oriented managerial capabilities, organizational knowledge-processing capacity, and mechanisms for knowledge appropriation jointly contribute to SME performance. The study thereby responds to the need for evidence capable of informing more integrated enterprise-development interventions aimed not merely at SME formation, but at improving innovation, sales turnover, market share, profitability, and long-term competitiveness.

LITERATURE REVIEW

Theoretical Framework

This study is anchored in the Knowledge-Based View of the Firm (KBV) and complemented by the Knowledge Spillover Theory of Entrepreneurship (KSTE). The KBV provides the overarching theoretical foundation for explaining how knowledge and knowledge-related capabilities contribute to firm performance, while KSTE explains how externally generated knowledge creates entrepreneurial opportunities that firms can recognize, acquire and exploit. Together, the two theories provide an integrated explanation of how manufacturing SMEs mobilize entrepreneurial competencies, develop absorptive capacity and utilize intellectual property assets to transform knowledge into improved firm performance.

Knowledge-Based View of the Firm

The Knowledge-Based View of the Firm (KBV) constitutes the overarching theoretical foundation of this study. The KBV conceptualizes knowledge as a strategically important organizational resource and the firm as an institution for integrating, coordinating and applying specialized knowledge. Grant (1996) argues that competitive advantage depends not merely on the possession of knowledge but on the firm's ability to coordinate and integrate knowledge distributed across individuals, organizational routines and processes. This perspective is particularly relevant to manufacturing SMEs, where critical knowledge is frequently

concentrated in founders and owner-managers and where formal managerial, technological and knowledge-management structures may be comparatively limited.

A central proposition of the KBV is that possession of knowledge does not automatically translate into superior firm performance. Knowledge must be recognized, mobilized, integrated and productively applied. For example, a manufacturing SME may possess substantial technical knowledge but fail to recognize commercially viable opportunities. Similarly, a firm may identify an opportunity but lack the capacity to acquire and integrate the external knowledge required to exploit it. Even where knowledge is successfully transformed into an innovation, the firm may fail to protect and appropriate its commercial value. The performance implications of knowledge therefore depend on the capabilities through which firms recognize opportunities, mobilize resources, process and apply knowledge, and capture value from knowledge-based outputs.

Within this study, entrepreneurial competencies, absorptive capacity and intellectual property assets represent complementary mechanisms through which manufacturing SMEs manage and derive value from knowledge. Entrepreneurial competencies comprising opportunity identification, networking, leadership and organizational learning represent managerial capabilities that enable owner-managers to recognize opportunities, mobilize relationships and resources, coordinate organizational activities and facilitate learning. From a KBV perspective, these competencies contribute to the effective mobilization and deployment of knowledge within the firm.

Absorptive capacity represents the organizational knowledge-processing capability through which externally generated knowledge is acquired, assimilated, transformed and exploited (Cohen & Levinthal, 1990; Lane et al. 2006; Zahra & George, 2002). It therefore provides a mechanism through which manufacturing SMEs extend their existing knowledge bases and convert external information and expertise into commercially useful knowledge. Firms with stronger absorptive capacity are expected to be better positioned to recognize relevant external knowledge, combine it with existing organizational knowledge and apply it to innovation and business activities (Changalima et al., 2025; Jallad & Karadas, 2024).

Intellectual property assets, in turn, relates to the protection, management and appropriation of value from knowledge-based outputs. Knowledge developed or recombined by SMEs may result in inventions, utility models, industrial designs, trademarks, copyrighted works or confidential know-how. Appropriate intellectual property policies and practices can enable firms to protect these outputs, regulate their use and support commercialization and value capture. Within the KBV, intellectual property assets therefore contributes to the appropriation dimension of the knowledge-value process by enabling firms to retain and commercially exploit value generated from strategically important knowledge.

The KBV consequently provides an integrative theoretical explanation for the study. Entrepreneurial competencies facilitate the recognition, mobilization and deployment of knowledge; absorptive capacity facilitates the acquisition, assimilation, transformation and exploitation of knowledge; and intellectual property assets facilitates the protection, management and appropriation of knowledge-based value. These mechanisms are conceptually distinct but complementary, providing the theoretical basis for examining their individual and combined relationships with manufacturing SME performance.

Knowledge Spillover Theory of Entrepreneurship

The Knowledge Spillover Theory of Entrepreneurship (KSTE) complements the KBV by explaining the external origins of knowledge and entrepreneurial opportunities. Whereas the KBV primarily explains how firms integrate and utilize knowledge as a strategic resource, KSTE explains how knowledge generated within firms, universities, research institutions and other organizations can create entrepreneurial opportunities beyond the organizations in which that knowledge originates.

Audretsch and Keilbach (2007) and Acs et al. (2013) argue that knowledge created through research, technological development and other innovative activities is not always fully commercialized by the organizations that generate it. Such unexploited or underexploited knowledge can spill over into the broader economic environment, creating opportunities that entrepreneurs and firms may recognize and transform into commercial activity. Entrepreneurs therefore serve as important conduits through which knowledge spillovers are converted into economic value.

The theory is particularly relevant to manufacturing SMEs because these firms operate within knowledge environments comprising customers, suppliers, competitors, universities, research institutions, government agencies and industry networks. These actors constitute potential sources of technological, market and managerial knowledge. However, the availability of external knowledge does not imply that all SMEs will derive equal benefits from it. Knowledge may be widely accessible, but firms differ in their ability to recognize its commercial relevance, access appropriate knowledge sources and integrate external knowledge with their existing knowledge bases.

This distinction connects KSTE directly with entrepreneurial competencies and absorptive capacity. Entrepreneurial competencies enable owner-managers to recognize commercially relevant opportunities arising from external knowledge, develop networks through which knowledge can be accessed, provide direction for its utilization and promote organizational learning. Absorptive capacity determines the organizational ability to acquire, assimilate, transform and exploit the knowledge obtained from external sources. Consequently, knowledge spillovers become economically valuable not simply because knowledge exists in the external environment, but because firms possess the capabilities required to recognize, internalize and exploit it.

The role of intellectual property assets arises subsequently when acquired or recombined knowledge generates commercially valuable outputs. Such outputs may require protection and strategic management to enable the SME to appropriate value from its knowledge investments. KSTE therefore principally explains the external knowledge and entrepreneurial opportunity interface, while the KBV provides the broader explanation of how knowledge is mobilized, absorbed, applied, protected and converted into organizational value.

Theoretical Synthesis

The two theories provide distinct but complementary explanations of the relationship between entrepreneurial competencies, absorptive capacity, intellectual property assets and SME performance. The Knowledge-Based View serves as the overarching theoretical framework, explaining knowledge as a strategic organizational resource and emphasizing the capabilities required to integrate, apply and appropriate it. The Knowledge Spillover Theory of Entrepreneurship complements the KBV by explaining how externally generated knowledge

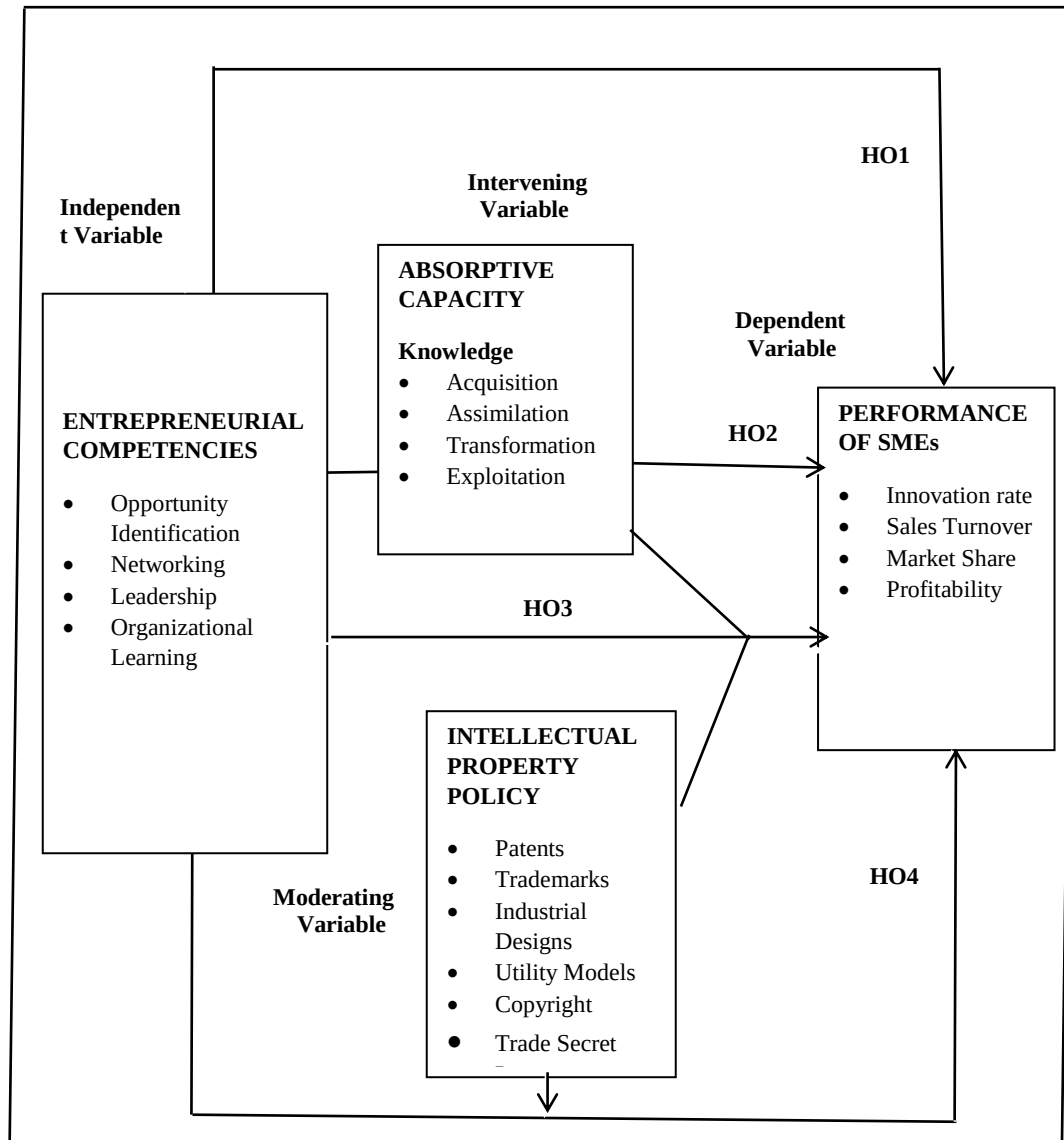
creates entrepreneurial opportunities and becomes available for recognition and exploitation by SMEs.

Within this integrated framework, entrepreneurial competencies represent the managerial capabilities through which opportunities are recognized, networks and resources are mobilized, organizational direction is provided and learning is facilitated. Absorptive capacity represents the organizational capability through which relevant external knowledge is acquired, assimilated, transformed and exploited. Intellectual property assets provides mechanisms through which commercially valuable knowledge-based outputs can be protected, managed and appropriated. Firm performance reflects the outcomes associated with the effective deployment of these complementary knowledge-related capabilities.

The theoretical logic can therefore be represented as a knowledge-value process in which external knowledge and knowledge spillovers provide potential opportunities; entrepreneurial competencies facilitate their recognition and mobilization; absorptive capacity enables relevant knowledge to be internalized and exploited; and intellectual property assets supports the protection and appropriation of value from knowledge-based outputs. These processes ultimately contribute to manufacturing SME performance.

Accordingly, this study does not treat the KBV and KSTE as competing theoretical explanations. Rather, KSTE explains the external knowledge-opportunity interface, while the KBV provides the overarching organizational explanation of how knowledge-related capabilities are mobilized and converted into firm value. This theoretical integration provides the foundation for examining the direct, intervening and combined relationships among entrepreneurial competencies, absorptive capacity, intellectual property assets and the performance of manufacturing SMEs.

Conceptual Framework



Empirical Review

Entrepreneurial Competencies and SME Performance

Empirical studies generally report a positive relationship between entrepreneurial competencies and SME performance, although the magnitude and mechanisms of this relationship vary across sectors and contexts. Kisubi et al. (2022), using a cross-sectional survey of SMEs in Uganda, found that entrepreneurial competencies positively influenced SME performance and that firm capabilities partially mediated this relationship. The study is relevant because it was conducted within an East African setting; however, its multi-sector sample limits direct generalization to manufacturing SMEs, whose performance depends substantially on technological, production and knowledge-management capabilities.

Similarly, Al Koliby et al. (2024a) found that entrepreneurial competencies contributed to innovation and sustainable performance among manufacturing SMEs, while Al Koliby et al. (2024b) demonstrated links between entrepreneurial competencies, knowledge management and sustainable performance. Collectively, these findings suggest that competencies influence performance not only directly but also through organizational mechanisms that enable entrepreneurs to mobilize resources, manage knowledge and pursue innovation. This supports treating entrepreneurial competencies as strategic managerial capabilities rather than merely individual characteristics.

Methodologically, much of the entrepreneurial competency literature relies on cross-sectional questionnaire surveys and owner-manager self-reports. While suitable for examining relationships among behavioural and managerial constructs, such designs provide limited evidence of causality and may be susceptible to common-method bias. Differences in the operationalization of entrepreneurial competencies also complicate comparison across studies. Broad composite measures can establish an overall competency performance relationship but may obscure the relative contribution of individual competencies.

Contextual differences are equally important. SMEs in developed economies generally operate within more mature financial, technological and innovation systems, whereas African SMEs often experience resource constraints, weaker research-industry linkages, restricted access to technology and finance, and greater dependence on owner-managers. Entrepreneurial competencies may therefore play a particularly important role in emerging economies, although institutional constraints may simultaneously restrict their translation into performance. The present study addresses this contextual and methodological gap by examining opportunity identification, networking, leadership and organizational learning among manufacturing SMEs in Kenya and assessing their contribution alongside other knowledge-related capabilities.

Absorptive Capacity and SME Performance

Empirical evidence generally associates absorptive capacity with innovation and firm performance, although studies differ in their measurement approaches and the mechanisms through which performance effects are modelled. The literature suggests that external knowledge creates value only when firms can effectively assimilate, transform and exploit it; hence, knowledge acquisition alone may be insufficient to improve performance.

Evidence from African SMEs provides useful contextual insights. Changalima et al. (2025), studying sunflower oil-processing SMEs in Tanzania, found that technological absorptive capacity influenced performance partly through e-business innovation. The use of PLS-SEM enabled the researchers to examine both direct and indirect relationships, demonstrating that

absorptive capacity may influence performance through complementary innovation mechanisms rather than exclusively through a direct pathway. However, the concentration on a single manufacturing subsector limits the generalizability of the findings to manufacturing SMEs with different technological and market characteristics.

Jallad and Karadas (2024) similarly reported significant mediation relationships among Palestinian SMEs and found that industry characteristics affected aspects of the relationships investigated. Together, these studies indicate that the performance effects of absorptive capacity are context-dependent and may be influenced by industry, innovation capability and other organizational resources. They also demonstrate the methodological value of moving beyond simple bivariate relationships toward models incorporating mediating, moderating and complementary organizational capabilities.

Context is especially important when comparing developed and emerging economies. Firms in developed markets typically operate within stronger innovation ecosystems characterized by established research institutions, technology-transfer systems, digital infrastructure and specialized knowledge providers. In contrast, African SMEs may acquire knowledge through relatively informal channels, including suppliers, customers, business networks, training programmes and experiential learning. Measures developed in advanced economies may therefore not fully capture how absorptive capacity operates within resource-constrained African SMEs.

A further methodological limitation is the widespread use of cross-sectional designs, which provide limited insight into the cumulative development of absorptive capacity over time. The present study contributes to the literature by examining knowledge acquisition, assimilation, transformation and exploitation across several manufacturing subsectors in Kenya and by assessing absorptive capacity alongside entrepreneurial competencies and intellectual property assets rather than as an isolated organizational capability.

Intellectual Property Assets and SME Performance

Empirical research on intellectual property and firm performance differs methodologically from research on entrepreneurial competencies and absorptive capacity. Developed-market studies frequently use large administrative datasets linking registered IP rights to objective financial indicators, whereas evidence from emerging economies is comparatively limited and often relies on smaller firm-level surveys.

European evidence generally demonstrates a positive association between formal IP ownership and firm performance. European Patent Office and European Union Intellectual Property Office (2025). firm-level analyses, for example, have linked registered patents, trademarks and industrial designs with financial information and found that firms owning IP rights tend to demonstrate stronger economic outcomes than non-owners. Such studies benefit from large samples, objective measures of IP ownership and financial performance, and controls for firm characteristics. However, formal IP ownership remains less prevalent among SMEs than larger enterprises, suggesting that smaller firms encounter barriers to participation in formal IP systems.

The transferability of these findings to African manufacturing SMEs requires caution. Developed-market firms operate within comparatively mature IP, financial and innovation ecosystems, with greater access to professional IP services, enforcement mechanisms and commercialization infrastructure. In emerging African economies, formal IP utilization may

be constrained by cost, limited awareness, enforcement concerns, access to professional services and uncertainty regarding the commercial returns from registration. SMEs may consequently rely on combinations of formal and informal appropriation mechanisms.

Methodological differences in IP measurement are therefore significant. Administrative datasets capture registered rights effectively but may underrepresent utility models, copyright, trade secrets and informal knowledge-protection strategies, which may be particularly important to manufacturing SMEs. The present study addresses this limitation by examining patents, utility models, industrial designs, trademarks, copyright and trade secrets, consistent with its enterprise-level conceptualization of IP assets.

Moreover, the observed association between IP ownership and superior performance does not necessarily establish causality. Better-performing firms may have greater resources to acquire and maintain formal IP rights, while IP protection may itself facilitate commercialization and value appropriation. This potential bidirectionality reinforces the need for contextual firm-level evidence. For Kenyan manufacturing SMEs, the relevant empirical question therefore extends beyond whether firms formally own IP rights to whether different IP mechanisms contribute to protecting knowledge, differentiating products and capturing value from innovation.

Empirical Synthesis and Research Gap

The empirical literature demonstrates that entrepreneurial competencies, absorptive capacity and intellectual property mechanisms can individually contribute to SME performance. However, the three areas have developed largely as separate empirical streams. Entrepreneurial competency research predominantly uses behavioural and perceptual survey measures; absorptive-capacity studies increasingly employ latent-variable and mediation models; while developed-market IP research often relies on large administrative datasets and objectively registered rights. Consequently, differences in measurement, analytical methods and research contexts make integration of the findings difficult.

A significant contextual gap also remains. Much of the robust IP and innovation evidence originates from developed economies with mature institutional, technological and financial systems. African studies provide increasingly relevant evidence on entrepreneurial competencies and absorptive capacity, but remain fragmented across countries, sectors and individual capability domains. The existing literature therefore provides limited evidence regarding how entrepreneurial competencies, absorptive capacity and intellectual property assets operate simultaneously within resource-constrained manufacturing SMEs. Existing studies have predominantly examined these capabilities independently or through selected bilateral relationships.

The present study addresses three interrelated gaps: methodological, contextual and integrative. Methodologically, it examines multiple organizational capabilities within a common empirical framework rather than relying on isolated capability performance relationships. Contextually, it generates evidence from manufacturing SMEs in Nairobi County, Kenya, thereby testing relationships that have frequently been established in different institutional and economic environments. Integratively, it examines entrepreneurial competencies, absorptive capacity and intellectual property assets together to determine their respective and combined contributions to SME performance.

This integrated approach recognizes that the capabilities perform different but potentially complementary functions. Entrepreneurial competencies facilitate opportunity recognition and

resource mobilization; absorptive capacity enables external knowledge to be acquired, assimilated, transformed and exploited; while intellectual property assets supports the protection and appropriation of knowledge-based value. The central empirical issue is therefore not merely whether each capability influences SME performance independently, but whether each retains explanatory value when the three are considered within the same model. Addressing this question provides a more contextually grounded understanding of manufacturing SME performance in Kenya.

Research Gap

Despite the growing body of literature on entrepreneurial competencies, absorptive capacity and intellectual property, several gaps remain. First, there is a capability-integration gap. Existing studies have generated considerable evidence regarding the performance implications of entrepreneurial competencies, absorptive capacity and intellectual property individually, but relatively few studies have integrated all three capability domains within a single empirical model. This fragmentation limits understanding of how entrepreneurial action, external knowledge processing and intellectual property protection collectively contribute to SME performance.

Second, there is a unique-contribution gap. Evidence that each capability is associated with performance when examined separately does not establish that each provides independent explanatory value when the other capabilities are simultaneously controlled. Entrepreneurial competencies and absorptive capacity may overlap because entrepreneurially competent firms may also be more effective at identifying and acquiring external knowledge. Similarly, intellectual property mechanisms may be associated with both entrepreneurial activity and knowledge exploitation. A combined model is therefore required to establish the relative and unique contribution of each capability domain.

Third, there is a knowledge-appropriation gap. Much of the entrepreneurship and absorptive-capacity literature emphasizes opportunity recognition, knowledge acquisition, learning and innovation, but gives comparatively less attention to the mechanisms through which SMEs protect and appropriate economic value from the knowledge and innovations they generate. Integrating Intellectual Property assets into the capability framework addresses this limitation by connecting entrepreneurial opportunity exploitation and knowledge processing with mechanisms for protecting innovations, brands, designs and commercially valuable know-how.

Fourth, an important contextual gap remains in developing economies. Much of the established empirical evidence on innovation, absorptive capacity and intellectual property has emerged from developed or technologically advanced economies. Manufacturing SMEs in Kenya operate under different institutional, technological, financial and market conditions, including resource constraints, uneven access to external knowledge and relatively limited utilization of formal intellectual property mechanisms. Findings established in other contexts therefore cannot automatically be generalized to Kenyan manufacturing SMEs.

Accordingly, the present study addresses these gaps by examining the combined effect of entrepreneurial competencies, absorptive capacity and Intellectual Property Assets on the performance of manufacturing SMEs in Nairobi County, Kenya. The integrated approach makes it possible to determine not only whether the three capability domains jointly explain SME performance but also whether each provides a unique contribution when the others are simultaneously taken into account. In doing so, the study connects opportunity recognition and

entrepreneurial action, external knowledge processing, and intellectual property protection and value appropriation within a unified explanation of manufacturing SME performance.

Research Hypotheses

Based on the empirical literature and the identified research gaps, the study proposes the following hypotheses:

H1: Entrepreneurial competencies, absorptive capacity and Intellectual Property Assets jointly have a statistically significant effect on the performance of manufacturing SMEs.

H1a: Entrepreneurial competencies make a positive and statistically significant unique contribution to SME performance after controlling for absorptive capacity and Intellectual Property Assets.

H1b: Absorptive capacity makes a positive and statistically significant unique contribution to SME performance after controlling for entrepreneurial competencies and Intellectual Property Assets.

H1c: Intellectual property assets makes a positive and statistically significant unique contribution to SME performance after controlling for entrepreneurial competencies and absorptive capacity.

METHODOLOGY

Research Design and Study Population

The study adopted a descriptive research design to examine the combined effect of entrepreneurial competencies, absorptive capacity and Intellectual Property Assets on the performance of manufacturing SMEs in Nairobi County, Kenya. The target population comprised 590 manufacturing SMEs in Nairobi County drawn from four sectors: food and beverage processing, cosmetics and detergents, leather and leather goods, and metal fabrication. Following data screening, coding checks and treatment of incomplete responses, 202 valid SME responses were retained for final analysis. Entrepreneurial competencies were operationalized through opportunity identification, networking, leadership and organizational learning, while absorptive capacity comprised knowledge acquisition, assimilation, transformation and exploitation. Intellectual Property Assets was operationalized through firms' utilization of patents, utility models, industrial designs, trademarks, copyright and trade secrets. SME performance was measured using innovation rate, sales turnover, market share and profitability, which were coded such that higher values represented stronger performance and combined into a composite performance measure.

Descriptive statistics were used to summarize the characteristics of the respondents, enterprises and study variables, while correlation analysis examined the associations among entrepreneurial competencies, absorptive capacity, intellectual property assets and SME performance. Multiple regression analysis was subsequently employed to determine the joint explanatory effect of the three strategic capabilities on SME performance and the unique contribution of each construct after controlling for the others.

RESULTS

The results are tabulated below:

Table 1: Descriptive Analysis for Distribution of the Final Sample by Manufacturing Sector

Manufacturing sector	n	%
Food & Beverages	82	40.6
Cosmetics & Detergents	44	21.8
Leather & Leather Goods	40	19.8
Metal Fabrication	36	17.8
Total	202	100.0

Source: Research Data, (2026)

Measurement of Entrepreneurial Competencies

Entrepreneurial competencies were measured through opportunity identification, networking, leadership and organizational learning. Twenty-seven items were combined to form the broader construct. The aggregate scale demonstrated excellent reliability in the final dataset (Cronbach's $\alpha = .907$). At the dimensional level, organizational learning recorded $\alpha = .867$, leadership $\alpha = .848$, opportunity identification $\alpha = .808$ and networking $\alpha = .734$.

Construct validity was supported by a Kaiser-Meyer-Olkin statistic of .854 and a statistically significant Bartlett's Test of Sphericity, $\chi^2 = 2,597.847$, $df = 351$, $p < .001$. The factor solution explained 66.76% of variance.

Measurement of Absorptive Capacity

Absorptive capacity was measured through knowledge acquisition, assimilation, transformation and exploitation using 17 items. The overall scale recorded Cronbach's $\alpha = .895$. The KMO statistic was .881 and Bartlett's test was statistically significant, $\chi^2 = 1,414.358$, $df = 136$, $p < .001$. Four factors were retained and explained 61.27% of variance.

The final composite mean was 3.954 ($SD = .541$), indicating generally high knowledge-processing capability in the sample. The dimensions reflect the firm's ability to obtain relevant external knowledge, interpret it, combine it with existing knowledge and apply it in organizational activities.

Measurement of Intellectual Property Assets

Intellectual property assets was operationalized through 35 items covering patents, trademarks, industrial designs, copyright, utility models and trade secrets. The construct captured the extent to which SMEs protect and strategically utilize these forms of intellectual property. The aggregate construct achieved Cronbach's $\alpha = .949$. The KMO statistic was .897 and Bartlett's test was statistically significant, $\chi^2 = 6,065.804$, $df = 595$, $p < .001$. Six factors were retained, explaining 70.87% of variance.

The final cleaned-data IP-assets composite had a mean of 3.126 ($SD = .753$). The lower mean relative to entrepreneurial competencies and absorptive capacity is important because it suggests that knowledge-protection and appropriation capability is less uniformly developed than managerial and knowledge-processing capability.

Measurement of SME Performance

SME performance was constructed from four ordered business indicators: innovation rate, sales turnover, market share and profitability. Each indicator was coded in ascending categories and

combined into the SME Performance Index. The final performance index had a mean of 2.536 (SD = .557). This multi-indicator construction recognizes that SME performance is not purely financial and allows innovation and market outcomes to be considered alongside turnover and profitability.

Data Analysis and Diagnostics

Pearson correlations were used to examine bivariate associations. Hierarchical ordinary least squares regression was then used to estimate the combined effect. Model 1 included entrepreneurial competencies. Model 2 added absorptive capacity. Model 3 added intellectual property assets. This ordering allows the analysis to show the incremental variance explained by knowledge-processing capability and knowledge-appropriation capability beyond entrepreneurial competencies.

Regression diagnostics indicated no serious multicollinearity. The reported tolerance and variance inflation factor values were .553 and 1.809 for entrepreneurial competencies, .586 and 1.706 for absorptive capacity, and .858 and 1.166 for intellectual property assets. Homoscedasticity tests were nonsignificant, and the Durbin-Watson statistic of 1.936 indicated no problematic autocorrelation. The predictors also showed acceptable skewness and kurtosis for regression analysis.

Table 2: Reliability and Construct-Validity Summary.

Construct	Items	Cronbach α	KMO	Variance explained (%)
Entrepreneurial competencies	27	.907	.854	66.76
Absorptive capacity	17	.895	.881	61.27
Intellectual property assets	35	.949	.897	70.87
SME performance	5	.828	.819	59.70

Descriptive Statistics and Correlations

The final N = 202 data show that entrepreneurial competencies had a mean of 4.042 (SD = .525), absorptive capacity a mean of 3.954 (SD = .541), intellectual property assets a mean of 3.126 (SD = .753), and SME performance a mean of 2.536 (SD = .557). The pattern suggests that managerial and knowledge-processing capabilities were comparatively well developed, while IP-asset utilization was more moderate.

All three predictors were positively related to SME performance at the bivariate level. Entrepreneurial competencies correlated with SME performance at $r = .418$, absorptive capacity at $r = .285$ and intellectual property assets at $r = .605$. Entrepreneurial competencies were strongly correlated with absorptive capacity ($r = .641$), while the relationship between entrepreneurial competencies and intellectual property assets was $r = .371$ and between absorptive capacity and intellectual property assets was $r = .291$.

Table 3: Descriptive statistics and Pearson Correlations (N = 202)

Variable	Mean	SD	1	2	3	4
1. Entrepreneurial competencies	4.042	.525	1.000			
2. Absorptive capacity	3.954	.541	.641	1.000		
3. Intellectual property assets	3.126	.753	.371	.291	1.000	
4. SME performance	2.536	.557	.418	.285	.605	1.000

Hierarchical Model Development

Model 1 included entrepreneurial competencies as the sole predictor. The model was statistically significant, $R^2 = .175$, adjusted $R^2 = .171$, $F(1, 200) = 42.43$, $p < .001$. This confirms the previously reported positive direct contribution of entrepreneurial competencies.

Model 2 added absorptive capacity. Explained variance increased only marginally from .1750 to .1755. The increase of approximately .001 was not statistically significant, $\Delta F(1, 199) = .124$, $p = .726$. In this model entrepreneurial competencies remained significant, whereas absorptive capacity did not contribute meaningful additional explanatory power.

Model 3 added intellectual property assets. Explained variance increased sharply from $R^2 = .176$ to $R^2 = .410$, an increase of approximately 23.4 percentage points. The change was statistically significant, $\Delta F(1, 198) = 78.69$, $p < .001$. The final model explained 41.0% of the variance in SME performance, with an adjusted R^2 of .401.

Table 4: Hierarchical Regression Model Summary

Model	Predictors entered	R^2	Adjusted R^2	ΔR^2	Model F	p
1	EC	.175	.171	.175	42.43	< .001
2	EC + ACAP	.176	.167	.001	21.19	< .001
3	EC + ACAP + IPP	.410	.401	.234	45.87	< .001

Final Combined Model

The final three-predictor model was statistically significant, $F(3, 198) = 45.87$, $p < .001$. Entrepreneurial competencies remained a significant positive predictor, $B = .251$, $SE = .078$, standardized $\beta = .236$, $t = 3.22$, $p = .002$. Intellectual property assets made the strongest unique contribution, $B = .387$, $SE = .044$, standardized $\beta = .523$, $t = 8.87$, $p < .001$.

Absorptive capacity did not make a statistically significant unique contribution after entrepreneurial competencies and intellectual property assets were controlled. Its coefficient was small and negative, $B = -.019$, $SE = .073$, standardized $\beta = -.018$, $t = -.258$, $p = .797$. The sign should not be interpreted as evidence that absorptive capacity harms performance; the bivariate correlation with performance is positive. Rather, the near-zero partial coefficient indicates that the variance in performance uniquely attributable to absorptive capacity is negligible once the other two capability domains are included.

Table 5: Final Multiple-Regression Coefficients Predicting SME Performance

Predictor	B	SE	Standardized β	t	p
Constant	.388	.257	—	1.51	.132
Entrepreneurial competencies	.251	.078	.236	3.22	.002
Absorptive capacity	-.019	.073	-.018	-.258	.797
Intellectual property assets	.387	.044	.523	8.87	< .001

H1 is supported because the three capabilities jointly explain a statistically significant proportion of SME performance.

H1a is also supported because entrepreneurial competencies retain a significant positive unique contribution.

H1b is not supported because absorptive capacity is not statistically significant in the final model.

H1c is strongly supported because intellectual property assets makes a large positive unique contribution and emerge as the strongest predictor.

DISCUSSION

Combined Explanatory Power of the Capability System

The central finding is that entrepreneurial competencies, absorptive capacity and intellectual property assets jointly explain a substantial proportion of SME performance. The 41.0% explained variance is materially greater than the 17.5% attributed to entrepreneurial competencies alone in the source analysis. This supports a broader knowledge-capability architecture rather than a single-capability explanation of manufacturing SME performance.

The result is consistent with research showing that SME outcomes emerge from combinations of entrepreneurial orientation, knowledge-processing routines, innovation systems and complementary capabilities. Al-Hakimi et al. (2021) demonstrate that entrepreneurial orientation produces stronger resilience outcomes when it is translated through absorptive capacity and innovation. Asad et al. (2023) similarly show that entrepreneurial orientation and total quality management contribute to SME performance through open innovation. Carrasco-Carvajal et al. (2023) show that absorptive capacity supports open-innovation practices and that innovation strategy is an important conversion mechanism. Al Koliby, Abdullah, and Suki (2024) show that entrepreneurial competencies and innovation contribute to manufacturing SME performance, while Al Koliby et al. (2024) connect entrepreneurial competencies, knowledge management and performance. Changalima et al. (2025) demonstrate that absorptive capacity contributes to performance in conjunction with e-business innovation. Lohrey and Willoughby (2025) position strategic IP management as an important business capability. The present study brings these streams together empirically.

However, the combined model should not be described as proof that all three capabilities are mutually reinforcing in a statistical interaction sense. The model establishes joint explanatory power and unique effects. It does not establish that the effect of entrepreneurial competencies becomes stronger at high absorptive capacity, or that absorptive capacity becomes more valuable at high IP levels. Such claims would require explicit interaction terms, configurational modelling or longitudinal capability-combination tests.

This distinction strengthens the contribution of the paper. The findings show that an integrated capability framework can explain a substantial portion of performance while simultaneously revealing unequal contributions among the elements. A capability system can be strategically coherent even when one component does not have an independently significant regression coefficient.

Collectively, these studies reinforce the argument that strategic resources become more valuable when embedded in systems that enable firms to sense, process, apply and appropriate knowledge.

The present study extends that logic by explicitly incorporating intellectual property assets. This is theoretically important because knowledge generation and knowledge absorption do not guarantee value capture. An SME may identify an opportunity and develop an innovation but still fail to secure commercial returns if the innovation is easily imitated, ownership is unclear, brand identity is weak or confidential know-how is inadequately managed. IP assets dimensions therefore add an appropriation dimension to the capability system.

Entrepreneurial Competencies Retain a Significant Direct Role

Entrepreneurial competencies remain positively and significantly related to performance after absorptive capacity and intellectual property assets are included. This suggests that opportunity identification, networking, leadership and organizational learning provide performance-relevant managerial value that is not fully captured by knowledge processing or IP management.

The result aligns with Kisubi et al. (2022), who establish a significant positive influence of entrepreneurial competencies on SME performance in Uganda. It is also consistent with Al Koliby, Abdullah, and Suki (2024), whose manufacturing-SME evidence links entrepreneurial competencies to sustainable performance. The present study extends this evidence by showing that entrepreneurial competencies retain explanatory power even in a model that includes sophisticated knowledge and IP variables.

The finding is theoretically important because it positions entrepreneurial competencies as action-oriented micro-foundations. Absorptive capacity can help a firm understand knowledge, and IP assets dimensions can protect knowledge, but neither automatically determines which opportunity should be pursued, how resources should be mobilized, how employees should be coordinated or how business networks should be used. Entrepreneurial competencies therefore remain directly connected to strategic action.

The reduced standardized coefficient in the combined model, relative to the single-predictor model, also demonstrates overlap. Some of the performance variation associated with entrepreneurial competencies is shared with absorptive capacity and intellectual property assets. This is expected because competent entrepreneurs are more likely to build knowledge-processing systems and identify protectable commercial outputs. Nonetheless, the significant unique effect confirms that entrepreneurial competencies are not merely proxies for the other constructs.

Why Absorptive Capacity Loses Significance in the Combined Model

Absorptive capacity presents the most nuanced finding. It is positively correlated with SME performance and strongly associated with entrepreneurial competencies, yet it does not explain unique performance variance in the final model. Adding absorptive capacity after

entrepreneurial competencies increases R^2 by only about .001, and its final partial coefficient is effectively zero.

This result is consistent with the separate mediation analysis, which found that absorptive capacity did not significantly transmit the effect of entrepreneurial competencies to SME performance. The two findings together suggest that absorptive capacity is strongly embedded within the broader knowledge-capability system but is not, in this dataset, an independent driver of the multidimensional performance index once entrepreneurial competencies and IP assets dimensions are controlled.

Several explanations are plausible. First, absorptive capacity may be an enabling rather than final-value capability. Changalima et al. (2025) show that technological absorptive capacity influences SME performance through e-business innovation. Knowledge acquisition and assimilation can therefore create potential value that requires innovation or commercialization before it affects sales, market share and profitability.

Second, the performance outcome is comparatively distal. Absorptive capacity may have a stronger immediate relationship with innovation capability, technology adoption or new-product development than with a composite that includes turnover, market share and profitability. Jallad and Karadas (2024) find significant mediation for performance outcomes in a model that includes absorptive capacity, but their results also demonstrate the relevance of industry context.

Third, entrepreneurial competencies and absorptive capacity are highly correlated. The correlation of .641 indicates substantial shared variance, though the VIF statistics remain well below problematic levels. Conceptually, organizational learning and external knowledge absorption may overlap in SME settings where the owner-manager is central to both processes. Once entrepreneurial competencies are included, little distinct performance variance may remain for the aggregate ACAP measure.

Fourth, the aggregation of acquisition, assimilation, transformation and exploitation may conceal stage-specific effects. Potential absorptive capacity can be high while realized absorptive capacity remains constrained. Future studies should disaggregate the construct and test whether transformation and exploitation are more directly related to performance than acquisition and assimilation.

Intellectual Property Assets are the Strongest Unique Predictor and Value Capture Capability

Intellectual property assets make the largest unique contribution in the combined model, with a standardized coefficient of $\beta = .523$. Their addition increases explained variance by approximately 23.4 percentage points. This is the paper's most striking empirical result.

The finding supports the argument that knowledge-based advantage depends not only on generating and processing knowledge but also on appropriating its value. Intellectual property assets can perform this appropriation function through legal exclusivity, secrecy, product differentiation, reputation protection and clearer ownership. In manufacturing, these mechanisms can translate innovation and know-how into defensible market positions.

The result aligns with Lohrey and Willoughby (2025), who conclude that SMEs can enhance innovation and business performance by treating IP management as a core management function. It is also consistent with the 2025 EPO-EUIPO firm-level analysis, which reports

higher revenue per employee among firms owning patents, trademarks or registered designs, although the study appropriately cautions that ownership and performance are associated rather than necessarily causally linked.

The Kenyan data broaden this discussion because the IP construct includes both formal and informal mechanisms. Patents, utility models and industrial designs capture technological and product-design protection; trademarks capture market identity; copyright captures creative and technical expression; and trade secrets capture confidential know-how. This portfolio approach is particularly appropriate for SMEs because innovation is heterogeneous and many valuable knowledge assets are not patentable.

The strong coefficient should not be interpreted as evidence that simply registering more rights will automatically raise performance. The source analysis shows that IP utilization varies by sector and that firms often rely on trademarks and trade secrets more than on patents. What the combined model indicates is that SMEs with stronger overall IP-asset development and utilization tend to achieve better performance even after entrepreneurial and absorptive capabilities are taken into account.

A differentiated Capability Complementarity Interpretation

The findings refine the meaning of complementarity. Complementarity does not mean that entrepreneurial competencies, absorptive capacity and intellectual property assets contribute equally or that a significant additive model proves statistical interaction. Rather, the constructs perform distinct strategic functions within the knowledge-to-performance process. Entrepreneurial competencies primarily support sensing, opportunity selection, networking and coordinated action. Absorptive capacity supports acquisition, interpretation, transformation and use of external knowledge. Intellectual property assets support protection, differentiation and appropriation of value.

The evidence supports a three-part knowledge architecture. Entrepreneurial competencies primarily support sensing, selection and strategic action. Absorptive capacity supports knowledge acquisition, interpretation and internal conversion. Intellectual property assets support protection, differentiation and appropriation. In the current sample, the first and third stages show the clearest direct relationship with the broad performance index, while the middle stage appears more enabling and contingent.

This interpretation shows that Intellectual property assets function both as an independent strategic resource and as a complementary capability that strengthens the conversion of entrepreneurial competencies into SME performance. The findings indicate that intellectual property assets, operationalized through intellectual property assets, significantly moderated the relationship between entrepreneurial competencies and SME performance. This means that the strength of the relationship between entrepreneurial competencies and SME performance varied depending on the level of intellectual property assets held and utilized by the enterprise.

Intellectual property assets should therefore not be conceptualized merely as a parallel strategic capability with an independent contribution to performance; rather, they perform a dual strategic role. First, they contribute directly to SME performance, and second, they condition the extent to which entrepreneurial competencies are translated into superior performance. The findings therefore position intellectual property assets as complementary value-appropriation mechanisms through which SMEs can strengthen the performance returns from their entrepreneurial competencies.

Theoretical Contribution

The findings make an integrated theoretical contribution by extending the Knowledge-Based View (KBV) and complementing it with the Knowledge Spillover Theory of Entrepreneurship to explain how knowledge progresses from external availability and entrepreneurial recognition to absorption, protection, appropriation and SME performance. Rather than treating knowledge possession or acquisition as sufficient for competitive advantage, the findings differentiate the capabilities involved at different stages of the knowledge-to-performance process.

From the KBV perspective, the findings demonstrate that knowledge-based advantage in manufacturing SMEs requires the interaction of managerial agency, knowledge-processing capability and value appropriation mechanisms. Entrepreneurial competencies provide managerial agency through opportunity identification, networking, leadership and organizational learning; absorptive capacity provides organizational routines for acquiring, assimilating, transforming and exploiting external knowledge; while intellectual property assets provides mechanisms for protecting, managing and appropriating value from knowledge-based outputs. The significant contribution of entrepreneurial competencies therefore reinforces the role of the entrepreneur as a knowledge integrator and strategic actor rather than treating knowledge as a resource that generates value independently of managerial action.

The nonsignificant unique contribution of absorptive capacity in the combined model further refines the KBV by demonstrating that knowledge-processing capability alone may be insufficient to generate market and financial outcomes. Although firms may successfully acquire, assimilate and transform external knowledge, its performance value depends on whether that knowledge is converted into commercially valuable outputs. This distinction is particularly relevant to resource-constrained manufacturing SMEs, where knowledge exploitation may depend on complementary resources such as finance, technology, production capacity, standards compliance, distribution and commercialization capabilities.

The strong contribution of intellectual property assets extends this reasoning from knowledge utilization to knowledge appropriation. Knowledge can contribute sustainably to performance only where firms are able to capture an economically meaningful share of the value created. Patents, utility models, industrial designs, trademarks, copyright and trade secrets provide different mechanisms for establishing ownership, controlling imitation and knowledge leakage, supporting differentiation and facilitating commercialization. Intellectual property therefore represents a strategic bridge between knowledge creation and economic value capture. Its significant moderating effect further demonstrates that IP assets do not operate solely as independent resources but can strengthen the extent to which entrepreneurial competencies are translated into SME performance.

Knowledge Spillover Theory complements this internal knowledge-based explanation by accounting for the external origins of knowledge and entrepreneurial opportunities. Knowledge spillovers from customers, suppliers, competitors, universities, research institutions and other actors may expose SMEs to technological, market and research-based opportunities, but availability and access do not automatically generate superior performance. Entrepreneurial competencies influence the recognition and pursuit of these opportunities, while absorptive capacity supports the internalization and recombination of externally acquired knowledge. The

findings extend this logic by demonstrating the importance of subsequent protection and value appropriation through intellectual property mechanisms.

The combined theoretical contribution can therefore be expressed through an extended knowledge-to-performance pathway:

External knowledge availability → entrepreneurial recognition and strategic action → knowledge acquisition, assimilation and recombination → IP protection and utilization → value appropriation → SME performance.

The findings indicate that the capabilities within this pathway do not contribute uniformly. Entrepreneurial competencies and intellectual property assets demonstrate clear direct performance effects, while absorptive capacity appears to operate more as an enabling knowledge-processing capability within the broader system. The study therefore extends capability-complementarity reasoning by demonstrating that complementary capabilities can perform different strategic functions and exhibit different statistical effects.

Importantly, this theoretical contribution is established within an African manufacturing SME context. The findings demonstrate that an integrated knowledge-capability framework provides substantially greater explanatory power than an entrepreneurial-competency-only explanation. The study therefore extends KBV and Knowledge Spillover reasoning into an emerging-economy context where resource constraints, institutional conditions and differences in access to knowledge, technology and IP systems may shape how organizational capabilities are converted into performance.

Empirical Contribution

The study provides context-specific empirical evidence from 202 manufacturing SMEs in Nairobi County, Kenya, by examining entrepreneurial competencies, absorptive capacity and intellectual property assets within a common empirical framework. This addresses the fragmented nature of previous research, which has predominantly examined these capabilities independently or through selected bilateral relationships.

The findings demonstrate empirically differentiated contributions among the three capability domains. Entrepreneurial competencies retained a significant positive unique relationship with SME performance after the other capabilities were controlled. Absorptive capacity was positively associated with performance at the bivariate level but did not make a statistically significant unique contribution in the combined model. Intellectual property assets, operationalized through patents, utility models, industrial designs, trademarks, copyright and trade secrets, emerged as the strongest unique predictor. Intellectual property assets also significantly moderated the relationship between entrepreneurial competencies and SME performance, demonstrating both direct and complementary performance roles.

The combined model explained 41.0% of the variance in SME performance, substantially exceeding the explanatory power of entrepreneurial competencies considered alone. The empirical contribution therefore lies not simply in confirming that the three capability domains are associated with SME performance, but in demonstrating their relative and simultaneous contributions. The findings show that entrepreneurial action, knowledge processing and IP-based value appropriation are related but empirically distinguishable capabilities rather than interchangeable dimensions of a single organizational capability.

The study further contributes evidence from an emerging African economy, where empirical research integrating entrepreneurship, absorptive capacity and intellectual property remains comparatively limited. By focusing specifically on manufacturing SMEs across food and beverages, cosmetics and detergents, leather and leather goods, and metal fabrication, the study provides contextually grounded evidence on how knowledge-related capabilities operate within enterprises facing different technological, production and market requirements.

Methodological Contribution

Methodologically, the study provides an integrated framework for examining entrepreneurial, knowledge-processing and intellectual property capabilities within the same empirical model. It combines descriptive analysis, reliability and construct-validity assessment, correlation analysis, hierarchical multiple regression, and diagnostic testing to distinguish between individual, unique, combined and conditional relationships with SME performance.

The operationalization of the constructs also provides a multidimensional approach to capability measurement. Entrepreneurial competencies were assessed through opportunity identification, networking, leadership and organizational learning; absorptive capacity through acquisition, assimilation, transformation and exploitation; and intellectual property assets through firm-level utilization of patents, utility models, industrial designs, trademarks, copyright and trade secrets. SME performance was similarly assessed multidimensionally through innovation rate, sales turnover, market size and profitability.

This integrated measurement and analytical approach enables the study to move beyond isolated direct-effect models by examining whether capabilities that appear important independently retain explanatory value when considered simultaneously. It also enables intellectual property to be examined not merely as formal registration or legal ownership but as part of the broader enterprise capability architecture. Applying the framework across four manufacturing subsectors provides a replicable methodological approach for examining entrepreneurial competencies, knowledge absorption, intellectual property utilization and SME performance in Kenya and comparable emerging-economy contexts.

Policy Contribution

The study provides an evidence base for integrating entrepreneurship development, knowledge and technology support, and intellectual property utilization within SME and industrial policy. Rather than treating IP as a stand-alone legal or awareness issue, the findings position IP utilization as part of the enterprise capability system through which knowledge and innovation are protected, differentiated and commercialized. The results therefore support policy interventions that connect competency diagnostics, university–industry and research linkages, technology extension, innovation support, IP identification and protection, commercialization, licensing and market development.

Practical Contribution

For SME owners, managers and business-development practitioners, the study provides a practical capability-development logic. Firms need to strengthen opportunity identification, networking, leadership and organizational learning; establish routines for acquiring, assimilating, transforming and exploiting external knowledge; and systematically identify, protect, manage and commercialize intellectual assets. IP audits, confidentiality systems, portfolio management, branding, licensing and technology-transfer decisions should be

embedded in product development and business strategy rather than undertaken only after innovation has occurred.

Managerial Implications

For SME managers, the combined findings imply that capability development should be balanced but prioritized according to the business bottleneck. Entrepreneurial competency development remains important because firms need strong opportunity identification, leadership, networking and organizational learning. Yet managerial capability should be connected to a deliberate knowledge and intellectual property strategy.

Managers should treat absorptive capacity as an implementation capability rather than merely as information access. External knowledge should be linked to defined operational or commercial actions: product reformulation, process improvement, digital adoption, quality improvement, standards compliance, customer acquisition or market entry. The relevant management question is not only what the firm has learned, but what business routine or offering has changed because of that learning.

The strongest priority emerging from the combined model is strategic IP management. Firms should identify protectable and commercially valuable knowledge, decide whether patents, utility models, designs, trademarks, copyright or secrecy are appropriate, establish ownership and confidentiality controls, and link protection decisions to commercial objectives. IP should be reviewed alongside product development, marketing, financing and partnership decisions.

Managers should also avoid treating IP registration as an end point. A trademark requires brand investment and consistent quality; a patent requires a route to market or licensing strategy; a trade secret requires confidentiality systems; a design requires commercial exploitation. The performance value arises from integration of protection with business strategy.

RECOMMENDATIONS

Policy Implications: Strengthening SME Strategic Capabilities and Intellectual Property Utilization in Kenya

The findings point to the need for a shift in Kenya's SME policy from fragmented entrepreneurship training, knowledge-support initiatives and intellectual property (IP) awareness towards an integrated capability-development approach. The combined model established that entrepreneurial competencies, absorptive capacity and intellectual property assets collectively explain 41.0% of the variation in SME performance, with IP assets making the strongest unique contribution. Policy interventions should therefore strengthen these capabilities as complementary drivers of enterprise performance rather than address them independently.

A key policy priority is to move SMEs from IP awareness to effective IP utilization and commercialization. Public support should go beyond measuring the number of entrepreneurs sensitized or trained and focus on whether SMEs identify their intellectual assets, undertake IP audits, select appropriate protection mechanisms, establish trade-secret controls, use IP strategically in branding and market entry, negotiate appropriate IP provisions in partnerships, license technologies and commercialize protected innovations. This requires sustained, practical and transaction-oriented support rather than reliance on one-off awareness programmes.

Kenya should establish an SME-focused IP utilization pathway linking enterprise diagnostics, innovation development, IP protection and commercialization. Support should include affordable IP audits; patent and utility-model searches and drafting; trademark and industrial-design registration; copyright guidance; trade-secret and confidentiality systems; IP ownership agreements; valuation; licensing; franchising; technology transfer; and guidance on using IP portfolios in investment and financing discussions. Effective implementation will require coordination among institutions responsible for enterprise development, research, innovation, standards, financing, technology transfer and intellectual property.

Policy should also address the innovation-to-protection and commercialization gap. SMEs developing new products, processes, packaging, brands or production know-how should receive early-stage IP screening before public disclosure, exhibitions, pitching, technology transfer or market launch. Innovation grants, incubation programmes, university–industry collaborations and public research commercialization initiatives should incorporate IP management and provide resources for appropriate protection and commercialization. Where formal registration is unsuitable, enterprises should be supported to establish appropriate trade-secret, confidentiality, documentation and access-control systems.

Support should further recognize sector-specific differences in IP utilization. Food and beverage enterprises may require greater emphasis on trademarks, packaging, industrial designs, process innovations, confidential recipes and trade secrets. Cosmetics and detergent enterprises may require support for formulation protection, branding, industrial designs and commercialization. Leather enterprises may benefit particularly from industrial designs, trademarks, copyright where applicable and brand development, while metal fabricators may require stronger invention harvesting, technical documentation, utility-model, patent, industrial-design and trade-secret support. However, the appropriate IP strategy should ultimately be determined by the intellectual assets generated by each enterprise rather than by sector alone.

Policy should also strengthen SME linkages with universities, research organizations and technology institutions. Knowledge- and technology-transfer initiatives should enable SMEs to acquire, assimilate, adapt, protect and commercially exploit external knowledge. Technology-transfer and collaborative research agreements should clearly address IP ownership, licensing, confidentiality and benefit sharing. At the same time, SMEs should be supported to develop the absorptive capacity required to transform externally acquired knowledge into commercially valuable products, processes and market opportunities.

Finally, SME policy should adopt outcome-based monitoring indicators. These should include the number of enterprises undertaking IP audits and screening; IP applications and registrations; documented trade-secret systems; innovations progressing from protection to commercialization; licensing and technology-transfer agreements; protected products reaching the market; revenue generated from IP-enabled products and brands; and growth in the number of IP-active SMEs. Such indicators would reposition IP from primarily an administrative registration function to a strategic instrument for innovation, value capture, enterprise competitiveness and industrial development.

Priority Recommendations

Strengthen Entrepreneurial Competencies among SME Owners and Managers

Government agencies, universities, industry associations and business-development service providers should deliver continuous, practice-oriented programmes in opportunity identification, networking, leadership and organizational learning. Interventions should be based on enterprise-level competency diagnostics and linked to mentorship, coaching and measurable application within the enterprise rather than stand-alone classroom training.

Build SME Absorptive Capacity and Strengthen Knowledge Linkages

SMEs should be supported to establish mechanisms for acquiring, assimilating, transforming and exploiting knowledge from customers, suppliers, universities, research institutions, competitors and industry networks. Technology-extension services, collaborative research, incubation and knowledge-transfer programmes should focus on enabling enterprises to translate external knowledge into product, process, organizational and market improvements.

Move from IP awareness to IP Utilization and Commercialization

IP and SME-support institutions, including the Kenya Industrial Property Institute (KIPI), should provide practical support that enables enterprises to identify intellectual assets, determine appropriate protection strategies and commercialize them. Support should encompass IP audits, prior-art and trademark searches, drafting and filing, trade-secret management, confidentiality systems, valuation, licensing, technology transfer, branding and market deployment.

Strengthen Implementation of National IP Policy for SMEs

Implementation of Kenya's national IP framework should incorporate explicit SME-focused utilization and commercialization targets and promote coordinated delivery among IP institutions, innovation agencies, research and technology organizations, universities, industry associations and financial institutions. Performance monitoring should emphasize protected and commercialized innovations, licensing and technology-transfer transactions, IP-enabled partnerships and revenue attributable to IP, rather than primarily counting awareness activities and participants trained.

Adopt Sector-Responsive IP Strategies

SME IP support should reflect differences in the nature of intellectual assets generated across manufacturing sectors. Food and beverage and cosmetics enterprises may require stronger support for trademarks, packaging, industrial designs, formulations and confidential process knowledge; leather enterprises may benefit from industrial designs, trademarks and trade secrets; while metal fabricators may require greater support for invention harvesting, technical documentation, utility models, patents, industrial designs and trade-secret management. Enterprise-level IP diagnostics should determine the most appropriate protection and commercialization strategy.

Strengthen the SME Innovation and Commercialization Ecosystem

Government, universities, research and technology organizations, financial institutions, industry associations and private-sector actors should establish connected pathways linking knowledge acquisition, technology adaptation, IP protection, financing, commercialization and market access. Innovation hubs, incubators, accelerators and publicly supported innovation

programmes should integrate IP management from the earliest stages of product and process development.

Institutionalize an Integrated SME Strategic Capability Approach

Rather than providing entrepreneurship training, knowledge support and IP services through separate interventions, SME-development programmes such as business development services (BDS) should integrate entrepreneurial competencies, absorptive capacity and IP utilization within a common enterprise diagnostic and development framework. SMEs should be assessed to identify capability gaps and provided with tailored interventions covering competencies, knowledge absorption, IP management, commercialization and market development. This approach would translate the study's combined findings into a practical mechanism for improving SME performance.

Shift Monitoring from Programme Outputs to Enterprise Outcomes

Government and SME-support institutions should complement conventional indicators such as enterprises trained and workshops conducted with measures of enterprise transformation. These should include improvements in entrepreneurial competencies and absorptive capacity, IP assets identified and protected, innovations commercialized, new products introduced, licensing transactions concluded, market expansion, sales growth and profitability. This would strengthen accountability for the actual contribution of SME-support interventions to enterprise performance.

Limitations and Future Research

The study used a descriptive research design. The regression results therefore demonstrate associations and unique explanatory contributions but do not establish temporal causality. High-performing firms may develop stronger capabilities because they have greater resources, while stronger capabilities may also improve performance. Longitudinal research is required to establish sequencing.

The combined model is additive rather than configurational. Although the paper uses a capability-complementarity interpretation conceptually, it does not claim statistical synergy. Future studies should test $EC \times ACAP$, $ACAP \times IPP$ and three-way interaction models, as well as fuzzy-set qualitative comparative analysis or latent-profile approaches, to determine whether particular capability combinations produce superior performance.

The absorptive-capacity result should be investigated at dimensional level. Future work should distinguish potential from realized absorptive capacity and examine whether transformation and exploitation are stronger predictors of performance than acquisition and assimilation.

The performance measure combines innovation rate, sales turnover, market share and profitability using ordered categories. Future studies should test the combined capability model separately for innovation, productivity, sales growth, export intensity and profitability using longitudinal objective data.

Sector-specific effects also warrant investigation. The current sample covers four manufacturing sectors, but larger samples would enable multi-group models to determine whether the relative importance of EC, ACAP and IPP differs systematically across food, cosmetics, leather and metal fabrication.

Finally, future studies should incorporate additional conversion capabilities such as innovation capability, digital capability, commercialization capability, finance access and market orientation. The 41% explained variance is substantial, but it also indicates that a majority of performance variation is associated with factors outside the three-capability model.

Acknowledgment

The author expresses sincere gratitude to the Technical University of Kenya for providing the academic environment and support necessary for undertaking this research. Special appreciation is extended to the supervisory team for their invaluable guidance, constructive feedback, and encouragement throughout the study. The author also acknowledges the Kenya Association of Manufacturers (KAM) and the participating manufacturing SMEs in Nairobi County for their cooperation and willingness to provide the data that made this research possible. Appreciation is further extended to the Kenya Industrial Research and Development Institute (KIRDI) for its support during the journey of undertaking this research and fostering research, innovation, and enterprise development. The views expressed in this article are those of the author and do not necessarily reflect the views of the affiliated institutions.

REFERENCES

- Acs, Z. J., Audretsch, D. B., & Lehmann, E. E. (2013). The knowledge spillover theory of entrepreneurship. *Small Business Economics*, 41, 757–774. <https://doi.org/10.1007/s11187-013-9505-9>
- Al-Hakimi, M. A., Saleh, M. H., & Borade, D. B. (2021). Entrepreneurial orientation and supply chain resilience of manufacturing SMEs in Yemen: The mediating effects of absorptive capacity and innovation. *Heliyon*, 7(10), e08145. <https://doi.org/10.1016/j.heliyon.2021.e08145> PubMed Central (PMC)
- Al Koliby, I. S., Abdullah, H. H., & Suki, N. M. (2024a). Linking entrepreneurial competencies, innovation and sustainable performance of manufacturing SMEs. *Asia-Pacific Journal of Business Administration*, 16(1), 21–40. <https://doi.org/10.1108/APJBA-09-2021-0480>
- Al Koliby, I. S., Mehat, N. A. B., Al-Swidi, A. K., & Al-Hakimi, M. A. (2024b). Is knowledge management a missing link? Linking entrepreneurial competencies and sustainable performance of manufacturing SMEs. *The Bottom Line*, 37(1), 71–97. <https://doi.org/10.1108/BL-07-2023-0230>
- Asad, M., Asif, M. U., Sulaiman, M. A. B. A., Satar, M. S., & Alarifi, G. (2023). Open innovation: The missing nexus between entrepreneurial orientation, total quality management, and performance of SMEs. *Journal of Innovation and Entrepreneurship*, 12, Article 79. <https://doi.org/10.1186/s13731-023-00335-7>
- Audretsch, D. B., & Keilbach, M. (2007). The theory of knowledge spillover entrepreneurship. *Journal of Management Studies*, 44(7), 1242–1254. <https://doi.org/10.1111/j.1467-6486.2007.00722.x>
- Carrasco-Carvajal, O., García-Pérez-de-Lema, D., & Castillo-Vergara, M. (2023). Impact of innovation strategy, absorptive capacity, and open innovation on SME performance: A Chilean case study. *Journal of Open Innovation: Technology, Market, and Complexity*, 9(2), 100065. <https://doi.org/10.1016/j.joitmc.2023.100065>
- Changalima, I. A., Ismail, I. J., & Amani, D. (2025). Driving SME performance through technological absorptive capacity and e-business innovation. *Sustainable Technology and Entrepreneurship*, 4(1), 100089. <https://doi.org/10.1016/j.stae.2024.100089>
- Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35(1), 128–152. <https://doi.org/10.2307/2393553>
- European Patent Office, & European Union Intellectual Property Office. (2025). *Intellectual property rights and firm performance in the European Union*. European Patent Office & European Union Intellectual Property Office.
- Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal*, 17(S2), 109–122. <https://doi.org/10.1002/smj.4250171110>
- Jallad, M. N., & Karadas, G. (2024). Entrepreneurial orientation and performance outcomes in Palestinian SMEs: The role of absorptive capacity and industry type. *Sustainability*, 16(23), 10637. <https://doi.org/10.3390/su162310637>

- Kenya National Bureau of Statistics. (2016). *Micro, small and medium enterprises (MSME) survey: Basic report*.
- Kisubi, M. K., Aruo, F., Wakibi, A., Mukyala, V., & Ssenyange, K. (2022). Entrepreneurial competencies and performance of Ugandan SMEs: The mediating role of firm capabilities. *Cogent Business & Management*, 9(1), 2115622. <https://doi.org/10.1080/23311975.2022.2115622>
- Lane, P. J., Koka, B. R., & Pathak, S. (2006). The reification of absorptive capacity: A critical review and rejuvenation of the construct. *Academy of Management Review*, 31(4), 833–863. <https://doi.org/10.5465/amr.2006.22527456>
- Lohrey, C. T., & Willoughby, K. W. (2025). Intellectual property and SMEs ... What's the state of play? *World Patent Information*, 83, 102401. <https://doi.org/10.1016/j.wpi.2025.102401>
- Man, T. W. Y., Lau, T., & Chan, K. F. (2002). The competitiveness of small and medium enterprises: A conceptualization with focus on entrepreneurial competencies. *Journal of Business Venturing*, 17(2), 123–142. [https://doi.org/10.1016/S0883-9026\(00\)00058-6](https://doi.org/10.1016/S0883-9026(00)00058-6)
- Organisation for Economic Co-operation and Development. (2022). *Financing SMEs and entrepreneurs 2022: An OECD scoreboard*. OECD Publishing. <https://doi.org/10.1787/e9073a0f-en>
- Wang, X., Yusof, R. N. R., & Jaharuddin, N. S. (2025). Driving SMEs' sustainable competitive advantage: The role of service innovation, intellectual property protection, continuous innovation performance, and open innovation. *Sustainability*, 17(9), 4093. <https://doi.org/10.3390/su17094093>
- Yahaya, H. D., & Nadarajah, G. (2023). Determining key factors influencing SMEs' performance: A systematic literature review and experts' verification. *Cogent Business & Management*, 10(3), 2251195. <https://doi.org/10.1080/23311975.2023.2251195>
- Zahra, S. A., & George, G. (2002). Absorptive capacity: A review, reconceptualization, and extension. *Academy of Management Review*, 27(2), 185–203. <https://doi.org/10.5465/amr.2002.6587995>
- Zongo, T. A. (2024). Small and medium enterprises in Africa: What kind of management for adequate growth? *Open Access Library Journal*, 11, 1–18. <https://doi.org/10.4236/oalib.1111106> SCIRP

BIOGRAPHY

Rose A. Mboya is an Assistant Principal Research Scientist and Head of Industrial Linkages, Policy and Intellectual Property at the Kenya Industrial Research and Development Institute (KIRDI), Nairobi, Kenya. She holds a B.Sc. degree in wood science and technology from Moi University, Kenya, and a Master of Intellectual Property degree from Africa University, Zimbabwe, and is a PhD Candidate in Entrepreneurship at the Technical University of Kenya. She has over 20 years of experience in intellectual property (IP) management, innovation, technology transfer, commercialization, research–industry linkages, and SME development. She has served as an external consultant and expert for the World Intellectual Property Organization (WIPO), contributing to the development and implementation of national IP policies and strategies and IP capacity-building initiatives in several African countries. She has also contributed to Kenya’s national IP policy and strategy processes and the development of the IP framework under the African Continental Free Trade Area (AfCFTA). She mentors innovators, entrepreneurs, and SMEs on the strategic use of IP, innovation, and commercialization to enhance competitiveness and growth. She is a Registered Patent Agent with the Kenya Industrial Property Institute (KIPI). Her research interests include entrepreneurial competencies, absorptive capacity, IP assets, SME performance, innovation management, technology commercialization, and enterprise competitiveness in Africa.