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Autonomy and Innovation Ecosystem Development in Kampala's Industrial Sector

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Abstract: This study examined the effect of autonomy on innovation ecosystems in the industrial sector of Kampala, Uganda. It addressed a gap in research that has generally treated autonomy as an internal organisational condition while giving limited attention to its contribution to collaboration, knowledge exchange, and institutional engagement across an innovation ecosystem. Guided by Entrepreneurial Orientation Theory and Innovation Ecosystem Theory, the study adopted a pragmatic philosophy and an explanatory sequential mixed-methods design. The quantitative population comprised 1,450 industrial enterprises. A sample of 306 enterprises was selected, 261 questionnaires were returned, and five multivariate outliers were removed, leaving 256 valid cases for analysis. 20 innovation ecosystem stakeholders were purposively selected for follow-up interviews. Quantitative data were analysed using SPSS and SmartPLS 4, while interview data were analysed thematically. Autonomy had a positive and statistically significant effect on innovation ecosystems ($\beta = 0.135$, $t = 2.270$, $p = 0.023$), and its unique effect size was small ($f^2 = 0.048$). The full structural model explained 59.1% of the variance in innovation ecosystems ($R^2 = 0.591$; adjusted $R^2 = 0.578$). Qualitative findings showed that centralised approvals, strict standard operating procedures, and institutional dependencies reduced firms' ability to make timely decisions and form external partnerships. The study concludes that autonomy supports innovation ecosystem participation, but its contribution depends on whether firms convert formal decision-making freedom into practical authority. Industrial firms should delegate defined innovation decisions, shorten approval processes, and permit operational units to initiate partnerships within clear accountability limits.

Keywords: *autonomy, entrepreneurial orientation, innovation ecosystems, industrial firms, Kampala, Uganda*

1. Introduction

1.1 Background and Problem

Industrial innovation increasingly depends on relationships that extend beyond the boundaries of a single firm. Firms obtain knowledge, specialised technology, finance, research capacity, regulatory guidance, and market access through interactions with suppliers, universities, government agencies, financial institutions, innovation hubs, customers, and other enterprises. Innovation ecosystem research therefore treats innovation as an interdependent process in which different actors contribute complementary resources and activities to a shared value proposition (Adner, 2017; Granstrand & Holgersson, 2020). This perspective is especially relevant in emerging economies, where firms often rely on external institutions and networks to compensate for limited internal resources and infrastructure.

Participation in an innovation ecosystem nevertheless requires firms to act. They must identify opportunities, commit staff and resources, initiate partnerships, exchange knowledge, and adjust decisions as conditions change. Autonomy, one of the five dimensions of entrepreneurial orientation, captures the freedom of individuals or teams to develop ideas and pursue opportunities without excessive organisational restraint (Lumpkin & Dess, 1996; Covin & Wales, 2012). When decision authority is decentralised, firms may respond faster to technical and market opportunities and may engage external partners without waiting for several layers of approval. When authority remains concentrated at the top, potentially valuable collaborations can be delayed or abandoned.

Most entrepreneurial orientation research has linked autonomy and related dimensions to firm performance, growth, or innovation outcomes (Rauch et al., 2009; Wales, 2016). These

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outcomes are important, but they do not fully explain whether autonomy helps firms participate in and strengthen the networks, institutions, and support arrangements through which innovation occurs. The distinction matters because a firm may possess creative employees while lacking the authority to negotiate with a university, join an industry network, test a technology with an external partner, or redirect resources toward a collaborative project.

Evidence on this relationship remains limited in Uganda's industrial sector. Kampala contains manufacturing, agro-processing, technology-oriented, and renewable-energy firms, together with public agencies, research institutions, financiers, associations, and innovation-support organisations. Their contribution to innovation depends partly on the speed and discretion with which firms can engage them. This study therefore asks: What is the effect of autonomy on innovation ecosystems in the industrial sector of Kampala, Uganda? It tests the null hypothesis that autonomy has no statistically significant effect on innovation ecosystems.

The problem is not simply whether industrial firms value innovation. It is whether their managers and operational teams possess enough authority to act when innovation requires collaboration across organisational boundaries. A potential university partnership, technology trial, supplier arrangement, or joint product-development opportunity can lose value when every operational decision must move through several approval levels. The resulting delay weakens knowledge exchange and makes the firm a less dependable ecosystem participant. Yet evidence remains limited on the extent to which autonomy explains innovation ecosystem outcomes in Kampala's five divisions of Central, Kawempe, Makindye, Nakawa, and Rubaga.

This study contributes by isolating autonomy within a multidimensional entrepreneurial orientation model and linking it to an ecosystem-level outcome. It also combines enterprise survey evidence with explanations from government institutions, financiers, universities, research organisations, innovation hubs, industry associations, and business-support organisations. The mixed-methods approach establishes whether autonomy contributes statistically and explains why its contribution may remain constrained in practice.

2. Theoretical Foundation

2.1 Entrepreneurial Orientation Theory

Entrepreneurial Orientation Theory explains the strategic practices and decision styles through which firms pursue opportunities under uncertainty. Lumpkin and Dess (1996) conceptualised entrepreneurial orientation as a multidimensional construct comprising autonomy, innovativeness, risk-taking, proactiveness, and competitive aggressiveness. The dimensions may vary independently and may make different contributions depending on organisational and environmental conditions. Autonomy specifically concerns the independent action of individuals or teams in bringing an idea or opportunity forward and carrying it through to completion.

Autonomy does not imply an absence of accountability. It refers to discretion within an organisational purpose: employees or units can make relevant decisions, experiment, and mobilise resources without unnecessary interference, while remaining responsible for results. This distinction is important in industrial organisations, where safety, quality, finance, and regulatory requirements legitimately constrain some decisions. The managerial issue is whether controls protect the firm or merely create delays that prevent timely innovation. Covin and Wales (2012) further show that the measurement of entrepreneurial orientation must reflect the particular conceptualisation being tested; autonomy should therefore be measured as a distinct construct rather than assumed from a general entrepreneurial posture.

2.2 Innovation Ecosystem Theory

Innovation ecosystems comprise interconnected actors, activities, artefacts, institutions, and relationships that jointly support the development and commercialisation of innovation (Adner, 2017; Granstrand & Holgersson, 2020). The ecosystem perspective shifts analysis from the isolated firm to patterns of interdependence. A firm may possess an innovative idea but still depend on research expertise, finance, complementary technologies, standards, distribution channels, and regulatory approval supplied by other actors. The performance of the system therefore depends on both the capabilities of individual organisations and the quality of coordination among them.

This study conceptualised innovation ecosystems through collaborative networks, innovation infrastructure, and regulatory and institutional support. Collaborative networks capture relationships with other firms, universities, research institutions, and industrial networks. Innovation infrastructure concerns access to technological facilities, digital systems, laboratories, training, and related support. Regulatory and institutional support concerns policies, information, advisory services, registration processes, and intellectual-property arrangements that affect innovation. This conceptualisation is consistent with the view that ecosystem outcomes arise from aligned contributions across organisational boundaries rather than from one actor acting alone.

2.3 Institutional Theory and Autonomy

Autonomy can influence innovation ecosystems through several mechanisms. First, delegated decision authority reduces the time required to respond to a potential partner or market opportunity. Second, employees who control relevant work processes can communicate operational knowledge directly to external collaborators. Third, project ownership strengthens responsibility for implementing ideas rather than merely proposing them. Fourth, discretion allows teams to reconfigure activities when experimentation produces unexpected results. These mechanisms connect a firm-level entrepreneurial capability to ecosystem-level collaboration and resource exchange.

Innovation Ecosystem Theory complements this argument by explaining why internal discretion matters outside the firm. Ecosystem relationships require alignment among actors whose decisions, investments, and timelines are interdependent (Adner,

2017). A firm whose representatives cannot commit to a pilot project, share information, or negotiate operational changes becomes a weak ecosystem partner even when it possesses useful capabilities. Autio et al. (2014) similarly emphasise that entrepreneurial innovation is shaped by context; the value of autonomy should therefore be assessed in relation to the networks and institutions through which firms act.

Autonomy may also have limits. Uncoordinated discretion can fragment priorities, duplicate expenditure, or expose a firm to legal and financial risks. Organisational procedures are therefore necessary, but they can become counterproductive when routine innovation decisions require repeated senior approval. Institutional Theory helps explain this tension because organisational action is shaped by formal rules, professional expectations, and established routines (Scott, 2014). The effect of autonomy on ecosystem participation is consequently expected to be positive, while its practical expression may be reduced by hierarchical and institutional constraints.

3. Empirical Literature and Research Gap

Empirical entrepreneurial orientation research generally reports a positive relationship between entrepreneurial posture and organisational outcomes, but much of that work treats entrepreneurial orientation as an aggregate construct. Rauch et al. (2009), in a meta-analysis of the entrepreneurial orientation and performance literature, found a generally positive association while also showing that relationships vary across studies and contexts. The aggregate approach establishes the value of entrepreneurial orientation but makes it difficult to determine whether autonomy makes an independent contribution after innovativeness, risk-taking, proactiveness, and competitive aggressiveness are considered simultaneously.

Research on the measurement of entrepreneurial orientation has consequently emphasised the need to match empirical models to the theoretical meaning of individual dimensions (Covin & Wales, 2012). Autonomy is particularly important because it concerns the authority to advance an initiative rather than the generation of an idea alone. Studies centred on firm performance, however, usually assess sales, growth, profitability, or product innovation. They provide less evidence on whether autonomous firms engage more effectively with universities, public institutions, financiers, technology providers, and interfirm networks.

Innovation ecosystem studies approach the issue from the opposite direction. They show that innovation depends on interdependent actors and complementary resources (Adner, 2017; Granstrand & Holgersson, 2020), but they rarely examine the internal decision structures that determine whether a participating firm can respond to ecosystem opportunities. Autio et al. (2014) highlight the importance of context in entrepreneurial innovation, supporting the argument that the value of autonomy depends on the institutional and organisational environment in which firms operate.

Three gaps follow from this literature. First, the outcome gap concerns the dominance of firm-performance and internal-innovation measures rather than innovation ecosystem outcomes. Second, the dimensional gap arises because entrepreneurial orientation is frequently aggregated, concealing the independent effect of autonomy. Third, the contextual gap concerns the limited evidence from industrial firms in emerging African economies, particularly Kampala. This study addresses the gaps by estimating the unique autonomy path within the complete entrepreneurial orientation model and by using stakeholder interviews to explain how organisational procedures shape the observed relationship.

4. Conceptual Framework and Hypothesis

The conceptual framework positions autonomy as the explanatory construct and innovation ecosystems as the outcome. Autonomy is reflected in independent decision-making, initiative, team discretion, and ownership of innovation projects. Innovation ecosystems are represented by collaborative networks, innovation infrastructure, and regulatory and institutional support. The proposed direction is positive because autonomous units can respond faster, initiate external relationships, and commit to innovation activities within their delegated authority.

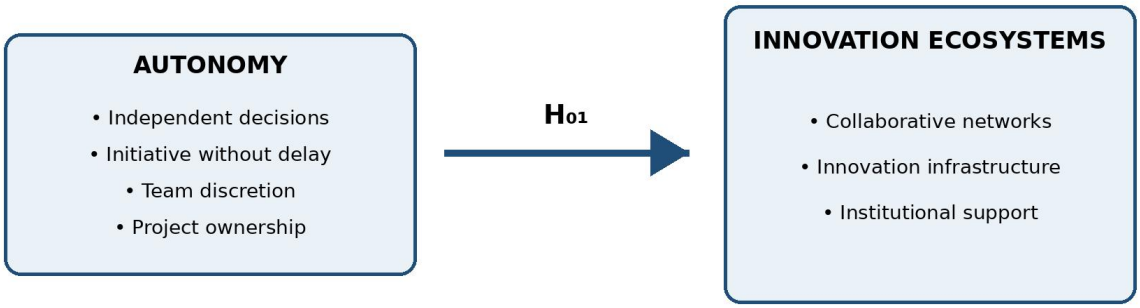


Figure 1 Conceptual Framework for Objective One

H_{01}: Autonomy has no statistically significant effect on innovation ecosystems in the industrial sector of Kampala, Uganda.

5. Methodology

5.1 Research Philosophy and Design

The study was grounded in pragmatism and used an explanatory sequential mixed-methods design. Positivist principles guided construct measurement and hypothesis testing in the quantitative phase, while critical realist reasoning supported interpretation of the organisational and institutional mechanisms identified in the qualitative phase. The design began with a survey and PLS-SEM analysis, followed by semi-structured interviews intended to explain the statistical result (Creswell & Plano Clark, 2018; Morgan, 2014).

5.2 Population and Sampling

The quantitative population comprised approximately 1,450 formally registered industrial enterprises operating in Kampala. The operational sampling frame covered manufacturing, agro-processing, technology-oriented industries, and renewable-energy and green-technology firms. The enterprise was the unit of analysis. One knowledgeable respondent represented each selected firm; eligible respondents included owners, chief executive officers, managing directors, general managers, operations managers, production managers, research and development managers, and innovation or technology managers.

Using the Krejcie and Morgan (1970) approach, the study selected 306 enterprises. Enterprises were grouped by industrial subsector before simple random sampling was applied. Of the 306 questionnaires distributed, 261 were returned, giving a response rate of 85.3%. Data screening identified five multivariate outliers using Mahalanobis distance at $p < 0.001$. Their removal produced a final quantitative sample of 256 cases.

For the qualitative phase, 20 innovation ecosystem stakeholders were purposively selected from government and regulatory institutions, financial institutions, universities and research institutions, business incubators and innovation hubs, industry associations, and business-support organisations. Participants were selected for their direct involvement in industrial policy, innovation finance, research, technology transfer, incubation, or enterprise support. They were assigned codes R1 to R20 to protect their identities.

Table 1 Population Sample and Usable Responses

Study component	Population	Selected sample	Usable cases	Sampling procedure
Industrial enterprises	1,450	306	256	Stratification followed by simple random sampling
Innovation ecosystem stakeholders	20	20	20	Purposive sampling

5.3 Data Collection and Measurement

Quantitative data were collected with a structured questionnaire using a five-point Likert scale from 1, strongly disagree, to 5, strongly agree. Autonomy was initially measured with four statements covering independent decision-making, initiative without constant approval, independent team goal-setting, and decision processes that promote innovation. Innovation ecosystems were measured through indicators relating to collaborative networks, innovation infrastructure, and regulatory and institutional support. The instrument was reviewed by experts and pilot tested before the main survey.

The qualitative phase used semi-structured interviews. Questions explored how decision authority affected firms' capacity to initiate collaborations, respond to opportunities, allocate resources, and interact with innovation-support institutions. Interviews were coded and analysed thematically, following the general procedures of familiarisation, coding, theme development, review, and interpretation described by Braun and Clarke (2006).

5.4 Data Analysis

SPSS was used for data screening and descriptive analysis. SmartPLS 4 was used to assess the measurement and structural models. Indicator loadings, Cronbach's alpha, composite reliability, and average variance extracted were used to evaluate reliability and convergent validity. Discriminant validity was assessed using the Fornell-Larcker criterion and the heterotrait-monotrait ratio. Structural paths were evaluated with 5,000 bootstrap resamples. Statistical significance was assessed at the 5% level, while effect size was interpreted using f^2 values of 0.02, 0.15, and 0.35 as small, medium, and large benchmarks, respectively (Cohen, 1988; Hair et al., 2022).

The autonomy path was estimated within the complete thesis model, which simultaneously included innovativeness, risk-taking, proactiveness, competitive aggressiveness, and government policy, finance, and infrastructure. Accordingly, the coefficient for autonomy represents its unique association with innovation ecosystems after accounting for the other predictors. The reported R^2 refers to the explanatory power of the full structural model and is not attributed to autonomy alone.

5.5 Ethical Considerations

Participation was voluntary and based on informed consent. Respondents were informed about the purpose of the research, their right to decline or withdraw, and the treatment of their information. Questionnaire and interview data were handled confidentially, and interview quotations were reported under anonymous participant codes. The study followed the required institutional and national research-ethics procedures.

6. Results

6.1 Data Screening and Diagnostic Assessment

Five cases exceeded the Mahalanobis-distance threshold and were removed before model estimation, leaving 256 valid observations. Autonomy recorded skewness of -0.349 and kurtosis of -0.704, both within conventional limits. The innovation ecosystem construct had skewness of 0.642 and kurtosis of 4.811, indicating greater peakedness. PLS-SEM was retained because it does not require multivariate normality and was appropriate for the model's predictive and explanatory purposes. The autonomy VIF was 1.944 and all predictor VIF values were below 2.2, indicating that multicollinearity did not threaten interpretation of the structural paths.

Table 2 Diagnostic Statistics for the Focal Constructs

Construct	N	Skewness	Kurtosis	Tolerance	VIF
Autonomy	256	-0.349	-0.704	0.514	1.944
Innovation ecosystems	256	0.642	4.811	-	-

6.2 Descriptive Results for Autonomy

Respondents reported a moderate overall level of autonomy (M = 3.36, SD = 1.010). The strongest item was the perception that organisational decision-making processes promoted innovation (M = 3.72, SD = 0.949). The lowest-rated item concerned employees' freedom to make independent work-related decisions (M = 3.15, SD = 0.963). This pattern suggests that respondents viewed formal decision structures as supportive of innovation while perceiving less freedom at the level of individual action.

Table 3 Descriptive Statistics for Autonomy

Measurement item	Mean	SD
Employees can make independent work-related decisions	3.15	0.963
Employees can take initiative without constant approval	3.36	1.034
Teams can set goals and work independently	3.21	1.095
Decision-making processes promote innovation	3.72	0.949
Overall autonomy	3.36	1.010

6.3 Measurement Model

After measurement-model refinement, three autonomy indicators were retained, with loadings from 0.878 to 0.907. Autonomy demonstrated strong internal consistency and convergent validity (Cronbach's alpha = 0.872, composite reliability = 0.921, AVE = 0.796). Innovation ecosystems also met the required thresholds (Cronbach's alpha = 0.789, composite reliability = 0.856, AVE = 0.543). The HTMT ratio between autonomy and innovation ecosystems was 0.677, below the conservative threshold of 0.85, supporting discriminant validity (Henseler et al., 2015).

Table 4 Reliability and Convergent Validity of the Focal Constructs

Construct	Retained indicators	Loading range	Cronbach's alpha	CR	AVE
Autonomy	AUT 1 to AUT 3	0.878-0.907	0.872	0.921	0.796
Innovation ecosystems	COLLNET 1 to 3 and INSRS 2 to 3	0.683-0.780	0.789	0.856	0.543

Discriminant validity was supported by both the Fornell-Larcker and HTMT criteria. The square roots of AVE were 0.892 for autonomy and 0.737 for innovation ecosystems, each exceeding the correlation between the two constructs (0.565). The corresponding HTMT value was 0.677, below the conservative 0.85 threshold.

Table 5 Discriminant Validity of the Focal Constructs

Criterion	Autonomy	Innovation ecosystems	Assessment
Square root of AVE	0.892	0.737	Acceptable
Interconstruct correlation	0.565	0.565	Below both AVE square roots
HTMT ratio	0.677	0.677	Below 0.85

6.4 Structural Model and Hypothesis Test

The bootstrapping results showed that autonomy positively and significantly predicted innovation ecosystems (β = 0.135, standard error = 0.059, t = 2.270, p = 0.023). The null hypothesis was therefore rejected. The f^2 value of 0.048 indicates a small unique effect according to Cohen's benchmarks. Statistical significance and practical magnitude should be interpreted together: autonomy contributed independently to the outcome, but its individual contribution was modest after the remaining entrepreneurial orientation dimensions and contextual factors were considered.

Table 6 Test of the Autonomy Hypothesis

Structural path	β	SE	t	p	f^2	Decision
Autonomy to innovation ecosystems	0.135	0.059	2.270	0.023	0.048	Reject H_{01}

The full structural model explained 59.1% of the variance in innovation ecosystems (R^2 = 0.591; adjusted R^2 = 0.578). This explanatory power belongs to the complete set of predictors, not to autonomy by itself. The model's Q^2_predict value was 0.258, indicating predictive relevance, and the SRMR was 0.067. These model-level statistics provide context for the autonomy coefficient but should not be interpreted as evidence that autonomy alone accounts for 59.1% of innovation ecosystem variation.

Table 7 Explanatory Predictive and Model Fit Statistics

Indicator	Value	Interpretation
R^2	0.591	Moderate to substantial explanatory power of the full model
Adjusted R^2	0.578	Variance explained after adjustment for predictors
Q^2 predict	0.258	Predictive relevance because the value is above zero
SRMR	0.067	Below the 0.080 guideline

6.5 Qualitative Findings

The qualitative analysis produced a central theme: operational constraints on strategic autonomy. Participants agreed that rapid decisions and practical authority were important for ecosystem engagement, particularly when firms needed to initiate partnerships or adapt to changing conditions. They also described a gap between formal autonomy and actual decision authority. Group procedures, head-office approval, and slow legal and financial review limited the speed at which firms could act.

> *"We want to try new things, but we operate within strict standard operating procedures set by the group." (R1)*

> *"To be part of an innovation ecosystem, you need the power to make quick decisions. If management holds all the strings, you cannot adapt." (R12)*

> *"In theory, we are supposed to be independent. But in practice, every minor decision requires a signature from the head office." (R16)*

> *"We tried to form a local partnership, but our internal legal and finance departments blocked it because the process was too slow." (R2)*

These accounts explain why the direct effect was statistically significant but small. Autonomy existed to some degree, yet organisational procedures limited the range and speed of decisions that employees and operating units could make. The qualitative evidence therefore converged with the quantitative result while identifying the mechanism that constrained its magnitude.

Table 8 Integration of Quantitative and Qualitative Findings

Quantitative result	Qualitative explanation	Integrated interpretation
Positive significant path (β = 0.135, p = 0.023); small effect (f^2 = 0.048)	Decision freedom supports rapid response and partnership formation, but central approvals and procedural delays restrict its use.	Autonomy contributes to ecosystem engagement, although formal discretion produces limited benefits when operational authority remains centralised.

7. Discussion

The study found that autonomy had a positive and statistically significant effect on innovation ecosystems in Kampala's industrial sector. Firms whose employees and teams possessed greater discretion were better positioned to initiate relationships, respond to innovation opportunities, and participate in collaborative activity. This result supports Entrepreneurial Orientation Theory, which treats autonomous action as a distinct entrepreneurial capability that allows individuals and teams to advance opportunities independently (Lumpkin & Dess, 1996). It also extends the relevance of autonomy beyond

internal creativity or firm performance to engagement with a wider innovation system.

The result is consistent with the ecosystem-as-structure perspective. Adner (2017) argues that ecosystem outcomes depend on the alignment of actors whose activities are jointly required for value creation. Alignment requires representatives who can make or secure decisions within a useful period. The interviews show that Kampala firms sometimes lacked this capacity: proposed collaborations stalled because local managers could not commit resources or complete approval procedures quickly. Autonomy therefore matters because it reduces an internal coordination barrier to external coordination.

The small effect size requires a measured interpretation. An f^2 of 0.048 means that autonomy made a meaningful but modest unique contribution after other entrepreneurial orientation dimensions and contextual conditions were included in the model. This does not contradict the significant p-value. The p-value indicates that the observed positive relationship was unlikely to be zero in the sampled population under the model, whereas f^2 describes the magnitude of autonomy's unique contribution. Innovation ecosystem development depends on several complementary capabilities; decision freedom alone cannot supply finance, infrastructure, technical knowledge, or willing partners.

The qualitative findings further show that autonomy should be judged by usable authority rather than policy statements. Firms may describe their units as autonomous while retaining approval requirements that prevent rapid experimentation or partnership formation. This distinction adds an institutional explanation to the entrepreneurial orientation argument. Organisational rules provide control and legitimacy, but excessive procedural demands can suppress the entrepreneurial behaviour they are intended to govern (Scott, 2014). Managers must therefore distinguish controls that manage genuine risk from routines that merely preserve hierarchy.

The findings also clarify the level at which autonomy operates. Individual discretion supports local problem-solving, but ecosystem participation frequently requires unit-level authority over budgets, contracts, information sharing, and partner selection. A firm may encourage employees to generate ideas yet still prevent them from acting across organisational boundaries. Effective autonomy consequently requires an explicit decision architecture that specifies which innovation decisions can be made by employees, project teams, departmental managers, and senior executives.

7.1 Theoretical Implications

Theoretically, the study links a firm-level entrepreneurial orientation dimension to an interorganisational outcome. It shows that innovation ecosystem research should consider the internal governance of participating firms, while entrepreneurial orientation research should consider outcomes beyond firm performance. The findings suggest that ecosystem participation depends partly on whether organisational actors possess sufficient discretion to coordinate with external partners. Autonomy is therefore a micro-level capability with system-level consequences, although those consequences remain contingent on complementary resources and institutional arrangements.

The result also supports a differentiated view of entrepreneurial orientation. Because the coefficient was estimated alongside the other entrepreneurial orientation dimensions, the significant autonomy path represents a distinct contribution rather than a general entrepreneurial-orientation effect. The qualitative evidence extends this explanation by identifying centralised approval as a mechanism that limits the conversion of autonomy into ecosystem action.

7.2 Practical and Policy Implications

For industrial managers, the findings support targeted delegation rather than unrestricted discretion. Firms should define categories of innovation decisions that operating units can make without repeated executive approval. These may include exploratory meetings, limited pilot projects, technical information exchange under approved safeguards, participation in industry networks, and partnership proposals within predetermined financial limits. Clear thresholds can preserve accountability while reducing delay.

Firms should also review the time required for legal, financial, and procurement approval of innovation partnerships. A designated cross-functional review process can examine proposed collaborations within a specified period. Managers should track proposals that lapse because of internal delay and use this information to identify avoidable bottlenecks. Performance assessment should recognise employees who develop responsible external collaborations, not only those who generate ideas internally.

Government agencies, financiers, universities, and innovation hubs should design programmes that recognise differences in firms' internal authority structures. Partnership processes should identify authorised decision-makers early and use staged commitments that allow firms to test collaboration before undertaking larger obligations. This approach can reduce the mismatch between the speed of an innovation opportunity and the pace of organisational approval.

8. Conclusion

Autonomy positively and significantly predicted innovation ecosystems among industrial firms in Kampala, but its unique effect was small. The result shows that decision freedom supports collaboration and ecosystem participation without acting as a sufficient condition on its own. Interview evidence explains the modest magnitude: hierarchical approvals, strict procedures, and institutional dependencies frequently prevented employees and operating units from using their formal discretion. The practical priority is therefore to convert stated autonomy into bounded operational authority. Industrial firms can strengthen their ecosystem participation by delegating defined innovation decisions, accelerating partnership review, and retaining clear accountability for resources and risk.

8.1 Limitations and Future Research

The cross-sectional survey identifies a statistically significant predictive relationship but cannot establish definitive temporal

causality. Both autonomy and innovation ecosystem conditions were reported by respondents from the same firms, which may introduce common-method bias. The final measurement model also represented innovation ecosystems with retained indicators concentrated in collaborative networks and institutional support after low-loading indicators were removed; future studies should develop and validate stronger measures of innovation infrastructure. Longitudinal research could examine whether changes in delegated authority precede changes in partnership formation, knowledge exchange, and technology adoption. Comparative studies across Ugandan cities or East African industrial centres could also test whether the effect varies with institutional and sectoral conditions.

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