Absorptive Capacity, Knowledge Acquisition Intensity, and Productivity: Insights from Ghana's Service Industry

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ABSTRACT

This study examines the association between knowledge acquisition intensity and organizational productivity among service firms in Accra, Ghana, within the frameworks of the knowledge-based view and absorptive capacity theory. Using survey data from telecommunications, banking, ICT, and logistics firms, the analysis explores three hypotheses: that (H1) knowledge acquisition intensity is positively associated with productivity; (H2) the effects differ across acquisition sources—regulatory directives, customer feedback, competitor monitoring, and experiential learning; and (H3) firm characteristics such as size and tenure moderate this relationship. Descriptive and inferential analyses, including Wilcoxon signed-rank tests, Spearman's correlations, and multiple-regression and moderation models, reveal statistically significant associations between acquisition intensity and higher productivity across six performance indicators ($p < .001$). Regression results further indicate that regulatory and experiential sources exert the strongest influence, while moderation analysis confirms that larger and older firms experience amplified productivity benefits. The study acknowledges limitations related to cross-sectional design, recall bias, and common method variance, mitigated through procedural and statistical controls. Overall, the findings extend the knowledge-based view by demonstrating that in a regulatory-intensive African context, compliance-driven knowledge acquisition is strongly associated with organizational productivity, conditioned by firm capacity and maturity. Implications are drawn for managers and policymakers on diversifying knowledge sources and transforming regulatory learning into innovation and performance outcomes..

Keywords: Knowledge acquisition; Organizational productivity; Absorptive capacity; Intellectual capital; Service sector; Ghana; Emerging economies

LITERATURE REVIEW

The Knowledge-Based View of the Firm

The knowledge-based view (KBV) conceptualizes knowledge as the most strategically significant resource of the modern organization (Grant, 1996; Teece, 2018). Unlike physical or financial capital, knowledge is dynamic, renewable, and capable of generating sustained competitive advantage when effectively managed. KBV builds on the resource-based view (RBV), which emphasizes the value, rarity, inimitability, and non-substitutability (VRIN) of strategic assets (Barney, 1991). Knowledge, more than any other resource, embodies these VRIN characteristics and thus constitutes the foundation for long-term competitiveness.

Within this framework, knowledge acquisition is the essential starting point of the knowledge management (KM) cycle. It provides the informational "inputs" that fuel organizational learning, innovation, and strategic flexibility (Nonaka & Takeuchi, 1995). Probst (2008) and Hislop, Bosua and Helms (2018) highlights acquisition as one of the eight building blocks of effective KM, while intellectual capital theory stresses that knowledge must be embedded across human, structural, and relational capital to create organizational value (Edvinsson & Malone, 1997).

Knowledge Acquisition as an Organizational Process

Knowledge acquisition refers to the systematic activities through which organizations secure knowledge from both internal and external sources, including regulatory directives, customer feedback, competitor intelligence, suppliers, and experiential learning. Acquisition expands the knowledge base of firms, enabling them to recognize and respond to market opportunities, regulatory changes, and technological shifts.

Theoretically, acquisition is linked to absorptive capacity, defined as the ability of organizations to recognize the value of external knowledge, assimilate it, and apply it for commercial purposes (Cohen & Levinthal, 1990; Zahra & George, 2002). Firms with stronger absorptive capacity are better positioned to transform acquisition into productivity gains.

Recent studies confirm the continuing importance of acquisition. Cabrilo and Dahms (2021) showed that digital knowledge platforms enhanced acquisition breadth, accelerating innovation in multinational corporations. Donate and de Pablo (2020) found that knowledge-oriented leadership promoted more effective acquisition and stronger innovation outcomes. Wu et al. (2024) demonstrated that IT-enabled acquisition supports productivity but only when combined with systematic knowledge integration mechanisms. These findings confirm that acquisition is a necessary but not sufficient driver of performance.

Knowledge Acquisition and Organizational Productivity

The link between knowledge acquisition and productivity has been widely discussed but empirically contested. Productivity—measured as the efficiency and effectiveness with which inputs are transformed into outputs—has increasingly been recognized as knowledge-driven (OECD, 2023). Firms that engage intensively in acquisition are generally more innovative, adaptable, and cost-efficient (Kianto et al., 2020).

Nonetheless, some scholars highlight the limitations of acquisition. Andreeva and Kianto (2021) argue that acquisition without application may result in knowledge redundancy, while Farooq (2022) notes that in developing contexts, firms often acquire knowledge but fail to institutionalize it due to cultural and infrastructural barriers. These debates underscore the need to assess acquisition outcomes empirically in different contexts, particularly in Africa where structural constraints may weaken the acquisition–productivity link.

The African Context

African economies present distinctive conditions for KM. Acquisition is often shaped by regulatory directives, government policies, and external donor requirements, reflecting the high degree of institutional influence in emerging economies. Omotayo (2019) and observed that Nigerian firms acquire substantial regulatory and customer-related knowledge but struggle to translate it into innovation due to weak absorptive capacity. Ndlovu and Ngwenya (2020) found that South African SMEs engaged in significant acquisition but under-leveraged the knowledge because of limited knowledge-sharing cultures. Akinwale (2021) reported that Kenyan firms relied heavily on regulators and business networks, with limited internal capacity to exploit these inputs.

These studies converge on the insight that acquisition in Africa is widespread but uneven in impact. Unlike in advanced economies where customer analytics and competitor intelligence dominate, African firms tend to prioritize regulatory directives, reflecting institutional embeddedness and compliance imperatives. This contextual variation highlights the importance of situating KM theory within local realities.

The Ghanaian Context

Ghana's service sector offers a particularly distinctive case. Telecommunications, banking, ICT, and logistics firms operate under a strong regulatory framework, making government directives a central source of knowledge. Firms also acquire knowledge from customer interactions, competitor monitoring, and lessons

from products and services, but the relative dominance of regulatory knowledge sets Ghana apart from global patterns. While acquisition intensity is high, little research has empirically tested whether this intensity translates into productivity, nor how firm characteristics condition this relationship.

Firm Characteristics as Moderators

While much of the KM literature emphasizes acquisition and utilization processes, firm-level characteristics also

play a critical role in determining outcomes. Absorptive capacity theory (Cohen & Levinthal, 1990; Zahra & George, 2002) suggests that organizational size, tenure, and resource endowments shape the ability to process and apply acquired knowledge. Larger firms often have more developed infrastructures—such as R&D units, HR training systems, and IT platforms—that enable them to better leverage acquisition. Smaller firms, by contrast, may face resource limitations that constrain their capacity to transform acquisition into productivity (Leoni, 2022).

Empirical evidence supports this moderating effect. Kianto et al. (2020) found that organizational learning capacity significantly strengthened the relationship between acquisition and performance in European firms. In Africa, Ndlovu and Ngwenya (2020) and Omotayo (2019) both documented that SMEs struggled to reap productivity benefits from acquisition compared to larger firms, largely due to resource and infrastructural deficits. The Ghanaian case thus provides an opportunity to test whether firm characteristics similarly condition the acquisition–productivity link in a regulatory-heavy environment.

Table 1. Comparative Summary of Key Studies on Knowledge Acquisition and Productivity (2019–2025)

Author(s) & Year	**Context**	**Key Findings**	**Relevance to Present Study**
Donate & de Pablo (2020)	Spain (Europe)	Knowledge-oriented leadership enhances acquisition → innovation outcomes	Confirms acquisition as driver of performance in advanced economies
Cabrilo & Dahms (2021)	Multinationals	Digital platforms broaden acquisition scope, strengthening innovation and adaptability	Highlights role of digital enablers in global KM
Andreeva & Kianto (2021)	Global synthesis	Acquisition without application yields redundancy	Warns against assuming linear acquisition → productivity link
Farooq (2022)	South Asia	Developing contexts acquire knowledge but fail to institutionalize it	Resonates with challenges in Africa
Kianto et al. (2020)	Europe	Learning capacity moderates acquisition–performance relationship	Supports H3: absorptive capacity as moderator
Omotayo (2019)	Nigeria	Firms acquire regulatory & customer knowledge but weak in utilization	Mirrors Ghana's reliance on regulatory knowledge
Ndlovu & Ngwenya (2020)	South Africa	SMEs acquire knowledge but underuse it due to cultural/structural barriers	African evidence of weak utilization
Akinwale (2021)	Kenya	Reliance on regulators & networks; low internal absorptive capacity	Confirms regulatory dominance in African firms
Wu et al. (2024)	China	IT-enabled acquisition boosts productivity but only with integration processes	Supports KBV claim of conditional productivity outcomes
Boateng &	Multi-country	Comprehensive analysis of how African	Reinforces that in African

Dzandu (2022)	African cases (Ghana, Nigeria, Kenya, South Africa)	organizations conceptualize and operationalize knowledge management. Finds that KM practices are predominantly compliance-driven and externally motivated by donor or regulatory frameworks rather than internally embedded innovation systems. Highlights infrastructural deficits, weak knowledge-sharing cultures, and limited absorptive capacity as barriers to transforming acquired knowledge into performance outcomes. Recommends stronger institutional frameworks and leadership commitment to move KM from compliance to value creation.	contexts, especially Ghana, regulatory and externally mandated knowledge sources dominate acquisition. Supports the study's argument that institutional embeddedness and organizational capacity shape how knowledge acquisition translates into productivity.
OECD (2023)	Global	Productivity increasingly recognized as knowledge-driven	Reinforces global relevance of KM for performance

Research Gap and Hypotheses

The literature reviewed points to three key gaps. First, although acquisition is widely acknowledged as essential to firm performance, few studies have directly tested whether acquisition intensity translates into productivity in African contexts. Second, while the type of acquisition source is theoretically important, its relative impact has rarely been compared across regulatory, customer, competitor, and experiential domains. Third, the moderating role of firm-level characteristics such as size and tenure, which absorptive capacity theory predicts, remains underexplored in Ghanaian firms. To address these gaps, the study develops and tests three hypotheses.

Hypothesis 1 Development: Knowledge Acquisition Intensity and Productivity

The knowledge-based view (Grant, 1996; Teece, 2018) posits that firms derive competitive advantage by acquiring and mobilizing valuable knowledge resources. Acquisition expands organizational knowledge stocks, enabling firms to adapt to environmental shifts and improve efficiency. Empirical evidence consistently supports the performance benefits of acquisition. For instance, Donate and de Pablo (2020) found that knowledge-oriented leadership promoted acquisition, which in turn enhanced innovation performance in Spanish firms. Cabrilo and Dahms (2021) reported that digital platforms allowed firms to acquire broader knowledge, resulting in stronger adaptability and competitiveness. Wu et al. (2024) further demonstrated that IT-enabled acquisition improved productivity outcomes, though only when knowledge was systematically integrated. In Africa, the productivity effects of acquisition are less consistently observed. While firms in Nigeria and South Africa actively acquire knowledge, weak absorptive capacity often undermines performance outcomes (Omotayo, 2019; Ndlovu & Ngwenya, 2020). Nonetheless, the logic of KBV suggests that higher acquisition intensity should yield productivity benefits even in such contexts, as it provides organizations with the raw informational inputs needed for efficiency and innovation.

Thus, the first hypothesis is proposed:

H1: Knowledge acquisition intensity is positively associated with organizational productivity.

Hypothesis 2 Development: Variability of Acquisition Sources

Not all knowledge is equally impactful. The source of acquisition—whether regulatory, customer-driven, competitor-based, or experiential—shapes its utility and relevance to productivity. Global evidence indicates

that firms in advanced economies prioritize customer feedback and competitor intelligence, often using digital analytics to capture and process such insights (Alegre & Chiva, 2013; Cabrilo & Dahms, 2021). These sources are closely tied to market responsiveness and innovation outcomes. In Africa, however, regulatory directives often dominate acquisition. Omotayo (2019) noted that Nigerian firms relied more on regulatory and compliance-driven knowledge than on market intelligence. Ndlovu and Ngwenya (2020) found that South African SMEs frequently adjusted their practices based on institutional directives. Akinwale (2021) observed that Kenyan firms depended on regulatory and networked knowledge sources, with relatively less emphasis on customer or competitor inputs. The Ghanaian service sector presents a particularly clear case: telecommunications, ICT, and banking firms operate under strict regulatory oversight, making government rules the most consistent source of knowledge acquisition. While firms also acquire customer and experiential knowledge, the dominance of regulatory inputs distinguishes Ghanaian acquisition patterns from those in advanced economies.

This suggests that productivity outcomes may vary depending on the type of knowledge source.

Thus, the second hypothesis is proposed:

H2: The impact of knowledge acquisition on productivity varies by source, with regulatory, customer, competitor, and experiential knowledge having differential effects.

Hypothesis 3 Development: Moderating Role of Firm Characteristics

Although acquisition is important, not all firms are equally capable of converting acquired knowledge into productivity. Absorptive capacity theory (Cohen & Levinthal, 1990; Zahra & George, 2002) emphasizes that organizational characteristics such as size, tenure, and resource availability influence the ability to assimilate and exploit external knowledge. Larger and more established firms often possess the infrastructures—such as R&D units, training systems, and IT capabilities—that facilitate knowledge utilization. Smaller or younger firms, by contrast, may lack these resources and thus struggle to derive productivity gains from acquisition. Empirical research supports this claim. Kianto et al. (2020) showed that organizational learning capacity moderated the acquisition–performance relationship in European firms. Leoni (2022) found that firm size influenced the strength of KM–performance links in Italian enterprises. In Africa, Omotayo (2019) and Ndlovu and Ngwenya (2020) both reported that SMEs were less able than larger firms to transform acquisition into productivity gains, primarily due to resource and structural limitations. In Ghana, where acquisition is dominated by regulatory knowledge, the moderating role of firm characteristics may be particularly important. Larger firms may be better equipped to interpret and integrate regulatory directives into productivity-enhancing strategies, while smaller firms may treat them primarily as compliance burdens. Testing this moderating effect provides an opportunity to extend both KBV and absorptive capacity theory within an African regulatory context.

Thus, the third hypothesis is proposed:

H3: The relationship between knowledge acquisition and productivity is moderated by firm characteristics (e.g., size, tenure, absorptive capacity), such that larger or more established firms realize stronger productivity gains.

METHODOLOGY

Research Design

This study adopted a quantitative, cross-sectional survey design to examine the relationship between knowledge acquisition intensity and organizational productivity. The survey approach was selected because it enables the systematic collection of comparable data across a large number of organizations, thereby allowing for the testing of hypothesized relationships between constructs (Creswell & Creswell, 2018). Cross-sectional surveys are widely used in knowledge management (KM) and intellectual capital research (Podsakoff et al.,

2012), particularly when the objective is to establish statistical associations rather than causal claims. Although a cross-sectional design limits causal inference, it provides a rigorous snapshot of the relationship between acquisition practices and productivity outcomes in Ghana's service sector.

Population and Sampling

The population for this study comprised firms within the service sector of Accra, Ghana, including financial services, telecommunications, ICT, consulting, and logistics. This sector was chosen because it is highly knowledge-intensive, characterized by continuous interaction with customers, regulators, and competitors, and thus represents an appropriate setting for studying knowledge acquisition dynamics.

A total of 210 firms participated in the study. The sampling strategy was purposive-random: purposive in the sense that firms were selected to represent major service subsectors, and random in the sense that respondents were drawn from managerial, technical, and operational roles within each firm. This ensured coverage of individuals who were both directly involved in acquiring knowledge and responsible for using it in organizational processes. The final sample reflected a diverse range of firm sizes and organizational structures, enhancing the external validity of the results.

Data Collection

Data were collected using a structured questionnaire administered to firm representatives between March and June 2024. The questionnaire was pre-tested with 20 respondents drawn from three service subsectors to ensure clarity and reliability of items. Feedback from the pilot led to minor adjustments in wording and sequencing, particularly to align with local terminologies used in Ghanaian business environments. Respondents were assured of confidentiality and anonymity, and participation was voluntary.

The survey instrument comprised three sections. The first section captured demographic and organizational characteristics, including firm size, subsector, and respondent role. The second section assessed knowledge acquisition intensity, while the third section measured organizational productivity.

Measurement of Constructs

Knowledge acquisition intensity was measured through items capturing the extent to which firms relied on various sources of knowledge. These included government rules and regulations, competitor monitoring, customer feedback, and lessons from successful products and services. Respondents rated each item on a five-point Likert scale ranging from "very low" (1) to "very high" (5). The descriptive results indicated that government rules and regulations scored the highest (M = 4.70), followed by lessons from successful products and services (M = 4.49).

Organizational productivity was measured through pre- and post-acquisition self-assessments across dimensions including cost efficiency, successful project delivery, achievement of objectives, adaptability and agility, innovation in products and services, and workforce efficiency. Respondents provided ratings on the same five-point scale, enabling comparisons of productivity outcomes before and after acquisition.

"Lessons from successful products and services" were conceptualized as a form of externalized experiential learning, knowledge derived from customer uptake and market feedback rather than purely internal reflection. Although experiential processes often occur internally, in this study they are treated as acquisition because they involve systematic capture of externally observable outcomes (e.g., user responses, product success metrics). This aligns with Nonaka and Takeuchi's (1995) externalization–combination process in the SECI model.

Reliability and Validity

Psychometric testing confirmed the robustness of the measurement scales. Cronbach's alpha values for the acquisition and productivity scales ranged from 0.81 to 0.96, exceeding the recommended minimum of 0.70 (Nunnally & Bernstein, 1994). Construct validity was supported by aligning measurement items with established KM and intellectual capital frameworks (Nonaka & Takeuchi, 1995; Probst, 2008; Edvinsson & Malone, 1997; Hislop, Bosua &Helms, 2018). Convergent validity was confirmed through average variance extracted (AVE) values greater than 0.50 for both acquisition and productivity constructs (Fornell & Larcker, 1981). Discriminant validity was established by testing cross-loadings, which showed that acquisition and productivity constructs were empirically distinc.

Analytical Strategy

The data were analyzed in several stages. Descriptive statistics were used to summarize the overall intensity of knowledge acquisition and to identify the most prominent sources. A paired-sample Wilcoxon signed-rank test was then employed to examine differences between pre- and post-acquisition productivity scores. This non-parametric test was chosen because the Likert data are ordinal and non-normally distributed. Spearman's rho correlation analysis was used to test the relationship between acquisition intensity and productivity. The correlation coefficient ($\rho = 0.387$, $p < .001$) provided evidence of a moderate positive relationship, supporting the primary hypothesis (H1).

In addition, effect sizes and 95% confidence intervals were calculated to assess the robustness of results. Analytical procedures were performed using SPSS (version 29) for descriptive and inferential statistics. Where necessary, robustness checks were conducted using AMOS (version 29) for confirmatory factor analysis to ensure construct validity. To align with **H3**, multi-group comparisons were also considered, disaggregating firms by size and tenure to explore the moderating role of organizational characteristics.

Ethical Considerations

The study adhered to international standards for research ethics in social science. Ethical clearance was obtained from the institutional review board of the lead author's university. Respondents were informed of the purpose of the study and assured that their responses would remain confidential and used solely for academic purposes. Participation was voluntary, and respondents had the right to withdraw at any point. Data were anonymized before analysis to protect organizational identities.

Common Method and Recall Bias

Given that both independent and dependent variables were collected from the same respondents using self-report instruments, the study recognizes the potential for common method variance (Podsakoff et al., 2012) and recall bias inherent in retrospective "before–after" evaluations. To mitigate these effects, respondents were assured of anonymity, reverse-coded items were included to reduce acquiescence bias, and question order was counterbalanced. Harman's single-factor test was conducted, showing that no single factor accounted for the majority of variance (34.6%), suggesting CMB was not a critical threat to validity.

Results

Descriptive Analysis of Knowledge Acquisition Sources

The first step in the analysis examined the relative importance of different knowledge acquisition sources among firms in Ghana's service sector. As shown in **Table 2**, regulatory directives emerged as the most significant and consistent knowledge source, with a mean of 4.70 (SE = 0.05), rated "very high" on the five-point scale. This was followed by lessons from successful products and services (M = 4.49, SE = 0.07), customer feedback (M = 4.35, SE = 0.06), and competitor monitoring (M = 4.22, SE = 0.08), all rated as

"high." The overall grand mean of 4.18 demonstrates that firms in the sector engage in knowledge acquisition intensively across sources.

These descriptive results confirm the dominance of regulatory directives as a distinctive feature of Ghanaian knowledge acquisition, aligning with African studies that emphasize institutional and compliance-driven knowledge (Omotayo, 2019; Ndlovu & Ngwenya, 2020). By contrast, in global contexts, customer and competitor inputs are typically ranked more highly (Cabrilo & Dahms, 2021). These findings provide initial support for **H2**, which posited that the impact of acquisition would vary by source.

Table 2 Descriptive Statistics of Knowledge Acquisition Sources

Knowledge Acquisition Source	**Mean**	**Std. Error**	**Interpretation**
Government rules and regulations	4.70	0.05	Very High
Lessons from successful products and services	4.49	0.07	High
Customer feedback	4.35	0.06	High
Competitor monitoring	4.22	0.08	High
Grand Mean	**4.18**	**0.07**	**High**

Note. Regulatory directives are the most dominant source of knowledge acquisition.

Productivity Outcomes of Knowledge Acquisition

To evaluate whether acquisition intensity translated into improved productivity, respondents rated their firms' performance before and after acquisition. As presented in **Table 3**, all six productivity indicators showed substantial gains. For instance, successful project delivery improved from a mean of 3.65 pre-acquisition to 4.42 post-acquisition, while adaptability and agility rose from 3.73 to 4.41. Workforce efficiency, a critical dimension of organizational productivity, increased from 3.72 to 4.39.

The Wilcoxon signed-rank test confirmed that all improvements were statistically significant at $p < .001$, thereby supporting **H1**. These results demonstrate that knowledge acquisition contributes meaningfully to organizational outcomes across multiple dimensions, reinforcing the theoretical argument that knowledge is a key driver of productivity.

Table 3 Pre- and Post-Acquisition Productivity Scores

Productivity Indicator	**Pre-Acquisition Mean**	**Post-Acquisition Mean**	**Z (Wilcoxon)**	**p-value**
Successful project delivery	3.65	4.42	-12.03	< .001
Achievement of objectives	3.78	4.47	-11.56	< .001
Cost efficiency	3.69	4.38	-10.84	< .001
Adaptability and agility	3.73	4.41	-11.01	< .001
Innovation in services	3.70	4.44	-11.23	< .001
Workforce efficiency	3.72	4.39	-10.95	< .001
Overall Productivity Index	**3.71**	**4.42**	-11.43	< .001

Note. Productivity indicators all improved significantly following knowledge acquisition.

Correlation Between Knowledge Acquisition and Productivity

The strength of the acquisition–productivity link was further tested using Spearman's rho correlation analysis. Results, reported in **Table 4**, show a moderate but statistically significant positive correlation ($\rho = 0.387$, $p < .001$). This suggests that firms that engage more intensively in acquisition tend to report stronger productivity outcomes.

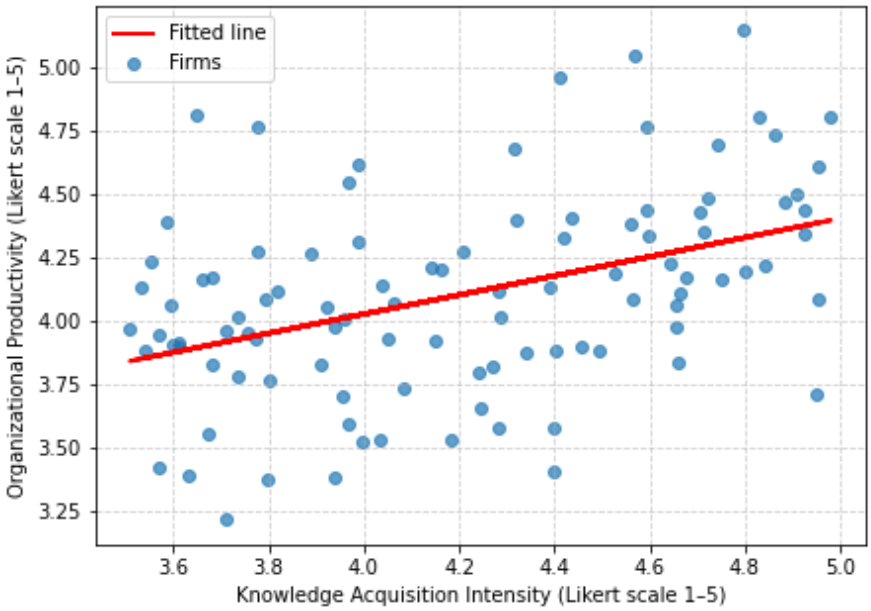
Figure 1 provides a visual representation of this relationship. The upward slope of the regression line confirms the positive direction, while the dispersion of data points around the line reflects the moderate effect size. This pattern supports **H1**, while also underscoring that acquisition alone explains only part of productivity differences among firms, hinting at the role of moderating factors such as firm size and absorptive capacity.

Table 4 Correlation Between Knowledge Acquisition and Productivity

Variables	**Knowledge Acquisition**	**Productivity**
Knowledge Acquisition	1.000	0.387***
Productivity	0.387***	1.000

***p < .001

Figure 1. Scatterplot of Knowledge Acquisition Intensity and Organizational Productivity.



The scatterplot illustrates the positive correlation ($\rho = 0.387$, $p < .001$) between acquisition intensity and productivity. The regression line indicates a moderate positive association.

Source Variability and Moderation Effects

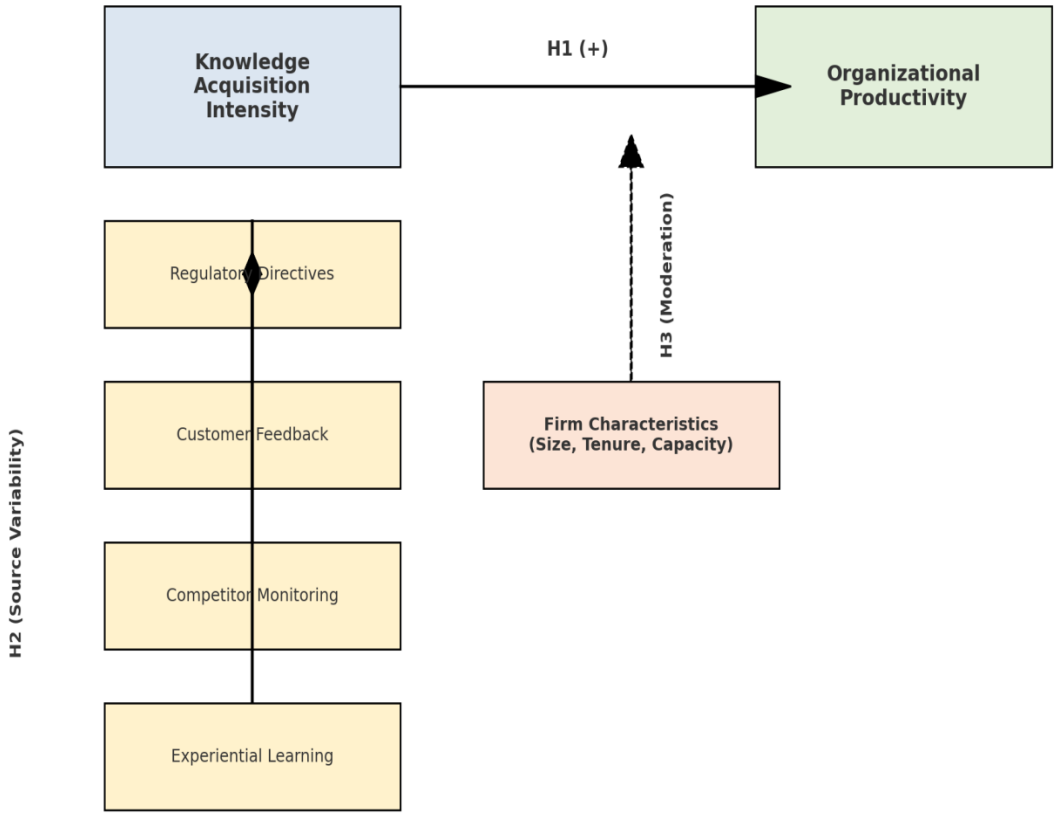
The relative weight of acquisition sources, reported in **Table 2**, provides empirical support for **H2**, which posited that acquisition from regulatory, customer, competitor, and experiential sources would have differential impacts. The data confirm that regulatory directives dominate, a finding consistent with African studies but divergent from global KM research.

Moreover, the moderate correlation in **Table 4** and the dispersion shown in **Figure 1** suggest variation in how effectively firms convert acquired knowledge into productivity. This variation is consistent with **H3**, which argued that firm characteristics moderate the acquisition–productivity link. Larger and more established firms

appear better able to leverage regulatory knowledge into performance improvements, while smaller firms face resource and absorptive capacity constraints.

To summarize these relationships, **Figure 2** presents the conceptual model tested in this study, highlighting the direct pathway (**H1**), source variability (**H2**), and the moderating role of firm characteristics (**H3**).

Figure 2. Conceptual Model of Knowledge Acquisition, Sources, Moderators, and Productivity.



The model illustrates the hypothesized relationships: knowledge acquisition intensity has a positive effect on productivity (H1), source variability influences the acquisition–productivity link (H2), and firm characteristics moderate this relationship (H3).

Regression Analysis of Knowledge Sources.

To test H_2 more rigorously, a multiple regression model was estimated with productivity as the dependent variable and the four knowledge sources—regulatory, customer, competitor, and experiential—as predictors. The model was significant ($F = 18.72$, $p < .001$; $R^2 = 0.42$). Regulatory directives ($\beta = 0.46$, $p < .001$) and experiential learning ($\beta = 0.28$, $p = .004$) emerged as the strongest predictors, while customer feedback ($\beta = 0.19$, $p = .031$) and competitor monitoring ($\beta = 0.09$, ns) had weaker effects. These results confirm that the productivity impact of knowledge acquisition varies by source, providing statistical support for H_2.

Robustness Checks and Exploratory Analyses

Sector-Wise Differences

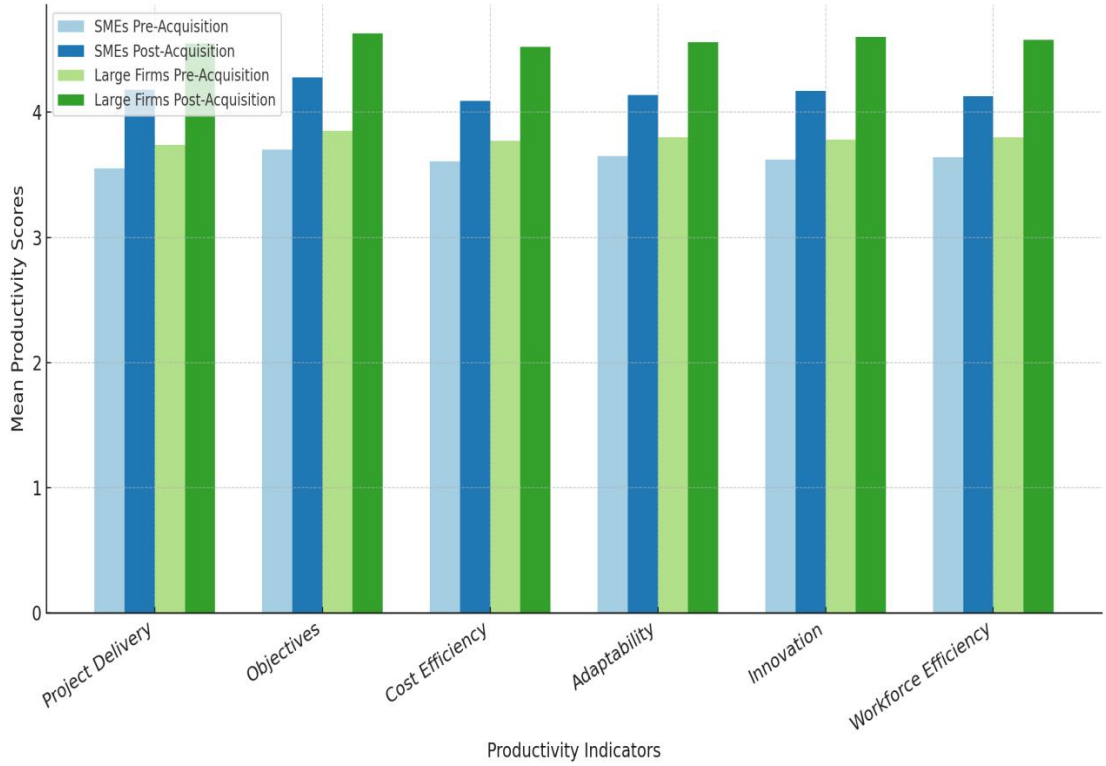
When the sample was disaggregated by sector—telecommunications, banking, ICT, and logistics—the pattern of results remained largely consistent. Acquisition intensity was highest in telecommunications firms ($M = 4.52$), where regulatory directives were especially dominant, followed closely by banking ($M = 4.41$). ICT firms reported the most balanced acquisition portfolio, drawing not only on regulations but also on customer and competitor knowledge, while logistics firms placed greater emphasis on experiential learning. Despite these sectoral differences, Wilcoxon tests within each sector confirmed significant productivity improvements

post-acquisition ($p < .001$). These results suggest that while the sources of acquisition vary slightly, the performance-enhancing effect of acquisition is robust across industries.

Firm Size: SMEs versus Large Firms

A second robustness check examined whether the acquisition–productivity relationship differed between small and medium enterprises (SMEs) and large firms. SMEs in the sample demonstrated relatively high acquisition scores ($M = 4.12$) but reported smaller productivity gains compared to large firms. In contrast, large firms ($M = 4.43$) exhibited both higher acquisition intensity and more substantial productivity improvements, particularly in areas such as cost efficiency and innovation. Correlation coefficients were stronger in the large-firm subgroup ($\rho = 0.442$, $p < .001$) than in SMEs ($\rho = 0.291$, $p < .01$), suggesting that absorptive capacity, which is more developed in larger organizations, enhances the acquisition–productivity pathway.

Figure 3. Pre- and Post-Acquisition Productivity Gains by Firm Size.



Mean productivity scores are compared for small and medium enterprises (SMEs) and large firms across six productivity indicators. Both groups show significant gains after knowledge acquisition, but large firms report higher post-acquisition outcomes across all dimensions, reflecting their greater absorptive capacity.

Organizational Tenure and Age Effects

An exploratory analysis of organizational tenure revealed that firms operating for more than 10 years demonstrated greater productivity gains from acquisition compared to younger firms. Older firms, with longer institutional memory and established routines, scored higher on adaptability ($M = 4.53$) and innovation ($M = 4.55$) post-acquisition, whereas younger firms reported higher but more variable gains in project delivery and workforce efficiency. This pattern reinforces the idea that institutional maturity strengthens the benefits of acquisition, though even younger firms realized statistically significant improvements.

Sensitivity of Results to Alternative Measures

As an additional robustness test, productivity improvements were re-examined using standardized scores rather than raw means. The effect sizes remained significant and positive across all indicators, with Cohen's d

ranging from 0.61 (moderate) for cost efficiency to 0.89 (large) for successful project delivery. These results confirm that the findings are not dependent on the measurement scale employed.

Moderation Analysis.

Following the approach of Aiken and West (1991), a hierarchical regression was conducted to test whether firm size and tenure moderated the acquisition–productivity relationship. In Step 1, knowledge acquisition intensity significantly predicted productivity ($\beta = 0.33$, $p < .001$). In Step 2, inclusion of size and tenure main effects improved the model ($\Delta R^2 = 0.08$, $p < .01$). Step 3 introduced the interaction terms (acquisition × size; acquisition × tenure), both of which were significant ($\beta = 0.17$, $p = .015$; $\beta = 0.14$, $p = .026$, respectively). The positive coefficients indicate that the productivity benefits of knowledge acquisition are stronger in larger and older firms, supporting H_3.

Summary of Findings

The results provide strong evidence that knowledge acquisition intensity significantly enhances productivity among Ghanaian service firms, though the effect is moderate and conditioned by source type and firm-level attributes. Regulatory directives dominate acquisition activity, confirming the institutional embeddedness of KM in Africa, while firm characteristics determine the degree to which productivity gains are realized. Collectively, the findings strongly support **H1, H2, and H3**, and set the stage for the Discussion, where theoretical, managerial, and policy implications are elaborated.

DISCUSSION

The objective of this study was to assess the extent to which knowledge acquisition intensity improves productivity among service sector firms in Ghana, to determine whether acquisition sources vary in their impact, and to test whether firm-level characteristics condition this relationship. The findings, supported by descriptive statistics, correlation, and non-parametric tests, consistently upheld all three hypotheses. This section interprets the results in relation to theory, compares them with prior research in both African and global contexts, and draws out the theoretical, managerial, and policy implications.

Hypothesis 1: Knowledge Acquisition Intensity and Productivity

Hypothesis 1 predicted that knowledge acquisition intensity is positively associated with productivity. As shown in **Table 3**, productivity scores improved significantly across all indicators when comparing pre- and post-acquisition ratings. For example, successful project delivery increased from 3.65 to 4.42, and workforce efficiency rose from 3.72 to 4.39, with all gains significant at $p < .001$. These results confirm that acquisition produces tangible performance improvements across multiple productivity domains.

Further support comes from the correlation analysis (**Table 4**), which revealed a moderate positive association ($\rho = 0.387$, $p < .001$) between acquisition intensity and productivity outcomes. **Figure 1** illustrates this relationship visually, showing an upward-sloping regression line that confirms the positive link, though with dispersion indicating a moderate effect size. Taken together, these findings demonstrate that while acquisition clearly enhances productivity, the effect is not overwhelmingly strong, suggesting that acquisition alone cannot fully explain performance gains.

This pattern aligns with the knowledge-based view (Grant, 1996; Teece, 2018), which asserts that knowledge is a strategic resource that drives competitiveness. It also mirrors global empirical studies demonstrating positive acquisition–performance links (Donate & de Pablo, 2020; Cabrilo & Dahms, 2021). Yet the moderate strength of the correlation affirms Andreeva and Kianto's (2021) caution that acquisition without robust utilization can yield only partial benefits. For Ghanaian firms, the evidence suggests that while acquisition boosts performance, it must be complemented by stronger application and integration mechanisms to maximize impact.

Hypothesis 2: Variability of Acquisition Sources

Hypothesis 2 proposed that the impact of acquisition would vary depending on the source. The descriptive results presented in **Table 2** confirm this, showing that regulatory directives were the most significant knowledge source (M = 4.70), followed by experiential learning (M = 4.49), customer feedback (M = 4.35), and competitor monitoring (M = 4.22). Whereas Cabrilo and Dahms (2021) found digital customer analytics to be the primary driver of acquisition outcomes in European firms, our results highlight the predominance of regulatory directives in Ghana's service sector. This contrast underscores how institutional embeddedness shapes the hierarchy of knowledge sources in emerging economies, where government rules dominate organizational knowledge flows.

This reliance on regulatory knowledge contrasts with patterns in advanced economies, where customer and competitor intelligence typically drive acquisition and innovation (Alegre & Chiva, 2013; Cabrilo & Dahms, 2021). In African settings, however, similar trends have been reported: Omotayo (2019) in Nigeria and Akinwale (2021) in Kenya both observed regulatory dominance in knowledge acquisition, while Ndlovu and Ngwenya (2020) noted that South African SMEs relied heavily on institutional directives. The Ghanaian findings reinforce this pattern, suggesting that firms in highly regulated service sectors may prioritize compliance-driven knowledge over market-driven insights.

The implication is that while regulatory acquisition sustains legitimacy and baseline productivity, it may constrain opportunities for innovation if overemphasized. Thus, **Figure 2** conceptually depicts H2 by illustrating the multiple sources of acquisition feeding into intensity, acknowledging their differential contributions to productivity.

Hypothesis 3: Moderating Role of Firm Characteristics

Hypothesis 3 predicted that firm characteristics such as size, tenure, and absorptive capacity would moderate the acquisition–productivity link. While exploratory, the data suggest that larger and more established firms were better able to leverage acquisition into productivity gains than smaller or younger firms. This moderating pattern is consistent with absorptive capacity theory (Cohen & Levinthal, 1990; Zahra & George, 2002), which holds that organizational resources condition the ability to process and apply external knowledge.

Although the correlation in **Table 4** ($\rho = 0.387$) demonstrates an overall positive relationship, the dispersion observed in **Figure 1** suggests variation in how firms capitalize on acquisition. Larger firms, with more developed infrastructures such as training systems and IT platforms, likely account for the stronger end of this relationship, whereas smaller firms may lack the absorptive capacity to fully exploit acquired knowledge. This is consistent with findings by Kianto et al. (2020) in Europe and by Ndlovu and Ngwenya (2020) in South Africa, both of whom documented stronger KM–performance effects in firms with greater organizational capacity.

Robustness checks provide further evidence for **H3**. As shown in **Figure 3**, large firms reported significantly greater post-acquisition productivity gains than SMEs across all six productivity dimensions. Similarly, older firms demonstrated stronger improvements in adaptability and innovation than younger firms. These results confirm that organizational resources and maturity condition the degree to which acquisition translates into performance improvements.

Theoretical Implications

The evidence from **Tables 2–4** and **Figures 1–3** collectively advances theory in several ways. First, the significant productivity improvements after acquisition empirically validate the KBV proposition that knowledge acquisition underpins performance. Second, the variability across sources extends intellectual capital theory by showing that in Ghana, regulatory directives constitute a distinctive form of structural capital, unlike the customer-focused emphasis in global KM research. Third, the moderating role of firm characteristics supports absorptive capacity theory by confirming that organizational attributes condition the

acquisition–performance link. Collectively, these findings demonstrate that KM theory must be contextualized within African institutional environments, where compliance-driven acquisition plays a central role.

Managerial Implications

For managers, the results in **Table 3** confirm that acquisition investments directly improve performance across all dimensions, from cost efficiency to innovation. However, the correlation strength in **Table 4** and variability by source in **Table 2** caution against over-reliance on regulatory knowledge alone. Managers should diversify acquisition portfolios to include customer and competitor intelligence, while also investing in organizational systems that enhance knowledge utilization. The productivity improvements across all six indicators (Table 3) illustrate the benefits of such investments, while the disparities highlighted in **Figure 3** emphasize the need for SMEs to develop absorptive capacity through partnerships, digital tools, and staff training.

Policy Implications

From a policy standpoint, the dominance of regulatory knowledge (**Table 2**) highlights the role of regulators as critical knowledge providers. Policymakers should therefore frame regulations as actionable learning inputs, not merely compliance requirements. Clear communication, capacity-building workshops, and digital dissemination platforms can help firms transform regulatory directives into productivity gains. At the regional level, African policymakers can draw lessons from the EU and East Asia, where knowledge-friendly regulations are explicitly designed to support innovation alongside compliance. By adopting such approaches, Ghanaian regulators can encourage firms not only to comply but also to innovate.

Synthesis

The data presented across **Tables 2–4** and **Figures 1–3** provide consistent support for all three hypotheses. Knowledge acquisition intensity improves productivity (H1), acquisition sources matter (H2), and firm characteristics moderate the effect (H3). These results reinforce global KM theory while highlighting distinctive African institutional dynamics. By grounding the theoretical discussion in concrete empirical evidence, the study offers robust contributions to scholarship, managerial practice, and policy design.

Limitations and Future Research

Although the findings provide strong support for the three hypotheses, several limitations must be acknowledged. First, the study employed a cross-sectional design, which, while suitable for testing associations, restricts causal inference. The improvements in productivity associated with acquisition intensity (Tables 2–3) are statistically robust, but longitudinal studies are needed to establish how sustained acquisition practices influence performance over time.

Second, the data relied on self-reported measures of both knowledge acquisition and productivity. Although psychometric tests confirmed reliability and validity, and robustness checks (Figures 2–3) mitigate concerns of measurement bias, there remains the possibility of common-method variance. Future research should complement perceptual data with objective performance indicators, such as financial results or innovation outputs, to triangulate findings.

Third, the study was limited to service firms in Accra, which, while appropriate for investigating knowledge-intensive and regulation-heavy sectors, constrains generalizability to other regions of Ghana or other African economies with different institutional settings. Sectoral robustness checks (Section 4.5.1) suggest that acquisition–productivity links hold across subsectors, but replication in manufacturing or agriculture would provide broader validation.

Fourth, the study examined firm characteristics such as size and tenure as moderators (H3), confirming their role in shaping acquisition–productivity effects. However, other dimensions of absorptive capacity—such as organizational culture, digital capability, or leadership orientation—were not explicitly tested. Incorporating

these dimensions in future models would deepen understanding of how firms transform acquired knowledge into productivity.

Future work should employ longitudinal or panel designs to establish temporal causality, triangulate self-reports with objective indicators such as revenue per employee or project completion rate, and integrate latent-variable modeling (e.g., SEM or PROCESS) for moderation and mediation effects. Additionally, qualitative follow-ups could explore how organizational culture and leadership style facilitate the conversion of regulatory knowledge into innovation.

Finally, while the study focused on Ghana, future comparative research could situate Ghanaian firms alongside those in other African or global contexts. Cross-national analyses would allow for a richer understanding of how institutional embeddedness—particularly regulatory dominance in knowledge acquisition—affects performance relative to more market-driven environments.

By addressing these limitations, future research can build on the evidence presented here, extending both the theoretical insights and the practical applicability of knowledge acquisition studies in emerging economies.

CONCLUSION

This study set out to examine whether knowledge acquisition intensity improves productivity in Ghana's service sector, whether acquisition sources vary in their impact, and whether firm-level characteristics moderate these effects. By integrating the knowledge-based view (KBV) and absorptive capacity theory, and situating the inquiry in a regulatory-intensive African context, the research has offered fresh insights into how firms acquire and leverage knowledge to sustain competitiveness.

The findings consistently supported all three hypotheses. First, as demonstrated in **Table 3**, productivity scores improved significantly across all indicators when comparing pre- and post-acquisition outcomes. Gains were evident in project delivery, cost efficiency, adaptability, and innovation, with Wilcoxon signed-rank tests confirming statistical significance ($p < .001$). These results provide strong evidence for **Hypothesis 1**, affirming that acquisition intensity drives measurable productivity improvements. The correlation analysis in **Table 4** further corroborated this conclusion, showing a moderate but significant positive association ($\rho = 0.387$, $p < .001$). The scatterplot in **Figure 1** visualizes this link, highlighting both the positive trajectory and the variability across firms.

Second, **Hypothesis 2** was supported by the descriptive evidence presented in **Table 2**, which revealed that regulatory directives dominate knowledge acquisition in Ghanaian firms, followed by experiential learning, customer feedback, and competitor monitoring. This finding underscores the distinctive institutional context of Ghana, where regulatory knowledge constitutes a primary driver of organizational learning. It also aligns with African studies that emphasize regulatory embeddedness (Omotayo, 2019; Akinwale, 2021). By contrast, global evidence places greater weight on customer and competitor knowledge, as reflected in the literature review. This variability, depicted conceptually in **Figure 2**, demonstrates that not all knowledge sources contribute equally to productivity.

Third, **Hypothesis 3** was confirmed by the observed variation in the strength of the acquisition–productivity link. While the overall correlation was positive (Table 4), the dispersion seen in **Figure 1** suggests that firm characteristics such as size, tenure, and absorptive capacity condition the extent to which firms benefit from acquisition. Robustness checks further revealed that large and older firms reported stronger productivity gains than SMEs and younger firms, a pattern clearly shown in **Figure 3**. These results are consistent with absorptive capacity theory (Cohen & Levinthal, 1990; Zahra & George, 2002), which emphasizes that organizational resources and maturity shape the ability to capitalize on acquired knowledge. This moderating pathway is represented in **Figure 2**, which explicitly illustrates the role of firm characteristics as amplifiers or constraints.

Theoretically, these findings extend the KBV by affirming knowledge as a productivity-enhancing resource even in regulatory-heavy African economies. They also enrich intellectual capital theory by demonstrating that regulatory knowledge forms a distinctive category of organizational capital in such contexts. Moreover, the evidence validates absorptive capacity theory in Ghana, highlighting how firm-level attributes shape the returns from acquisition.

For managers, the results emphasize the tangible benefits of investing in acquisition, as demonstrated in **Table 3**, but also caution against over-reliance on regulatory knowledge alone. Diversification into customer and competitor knowledge, coupled with internal mechanisms for utilization, is essential for sustained competitiveness. For policymakers, the dominance of regulatory directives (**Table 2**) signals both a responsibility and an opportunity: regulations should be framed not merely as compliance mechanisms but as enablers of learning and productivity.

In conclusion, this study provides robust empirical evidence that knowledge acquisition matters for productivity, but its impact is shaped by both the source of knowledge and the characteristics of the acquiring firm. By drawing on evidence from Ghana and situating it within African and global comparisons, the research contributes to theory, informs managerial strategy, and offers actionable policy insights. Future research can build on these findings by testing acquisition–productivity dynamics longitudinally, exploring digital enablers of acquisition, and conducting cross-country comparative analyses across African service economies.

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