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The Impact of Intellectual Capital, Competitive Advantage, and Knowledge Management on Firm Performance: A Resource-Based View Approach (Evidence from Knowledge-Based Firms)

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1. Introduction

This study investigates the impact of intellectual capital and knowledge management on the performance of knowledge-based firms, emphasizing the mediating role of competitive advantage and drawing on the framework of the Resource-Based View (RBV) (Barney, 1991). In contemporary economies, value creation increasingly depends on intangible, knowledge-driven resources rather than physical assets. Knowledge-based firms, by definition, rely on specialized human expertise, organizational routines, relational networks, and technology-enabled learning to create and commercialize innovation. RBV suggests that firms achieve superior performance when they possess and deploy resources that are valuable, rare, difficult to imitate, and non-substitutable, and when those resources are mobilized in ways that generate sustainable strategic positions (Barney, 1991). Within this framing, intellectual capital (human, structural, and relational capital) represents a portfolio of strategic intangible resources (Bontis, 1998), whereas knowledge management represents the organizational processes that enable the systematic acquisition, conversion, sharing, storage, and application of knowledge (Andreeva & Kianto, 2011). The study further argues that intangible resources may enhance performance either directly through internal improvements (e.g., process efficiency, learning capacity) or indirectly by shaping a defensible competitive position. Therefore, this research tests both direct effects of intellectual capital on performance and knowledge management on performance and indirect effects of these constructs through competitive advantage, while also examining the independent contribution of competitive advantage to

performance. Firm performance is measured through the Balanced Scorecard (BSC) to capture both financial and non-financial outcomes and to align the assessment approach with the multidimensional nature of performance in knowledge-intensive settings (Kaplan & Norton, 1992, 1996).

2. Research hypotheses

Drawing on the literature on intellectual capital, knowledge management, and competitive advantage, this study proposes the following hypotheses:

H1. Intellectual capital has a positive and significant effect on firm performance.

H2. Intellectual capital has a positive and significant effect on the firm's competitive advantage.

H3. Intellectual capital has a significant effect on firm performance through the mediating role of competitive advantage.

H4. Knowledge management has a positive and significant effect on firm performance.

H5. Knowledge management has a positive and significant effect on the firm's competitive advantage.

H6. Knowledge management has a significant effect on firm performance through the mediating role of competitive advantage.

H7. Competitive advantage has a positive and significant effect on firm performance.

3. Methods

This research is applied in purpose and adopts a descriptive–correlational design using survey data. The empirical context consists of knowledge-based firms operating in Iran, and the temporal scope of the study covers year 2025. The statistical population includes senior and middle managers, selected because of their comprehensive understanding of organizational resources, knowledge processes, competitive positioning, and firm performance.

Data were collected using a structured online questionnaire. More than 600 questionnaires were distributed to eligible respondents, resulting in 162 returned questionnaires, of which 158 were complete and suitable for analysis. The respondent profile reflects substantial managerial experience and decision-making authority, with the majority occupying senior executive or board-level positions. This enhances the credibility of perceptual measures related to strategy, competitive advantage, and performance.

Measurement instruments were drawn from established studies and adapted, where necessary, to ensure content validity through expert review. Firm performance was operationalized as a higher-order construct based on the BSC, encompassing four dimensions: financial performance, customer outcomes, internal process efficiency, and learning and growth (M'maiti,

2014). Intellectual capital was measured as a higher-order construct reflected by human, structural, and relational capital (Rehman et al., 2022). Knowledge management was measured through its core process dimensions—knowledge acquisition, knowledge conversion, and knowledge application—following Gold et al. (2001). Competitive advantage was measured using a multi-item scale adapted from Azeem et al. (2021).

All items were measured on a five-point Likert scale ranging from very low to very high. Data preparation was conducted using Excel (2024), and hypotheses were tested using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4. PLS-SEM was chosen due to its suitability for complex models involving hierarchical component constructs and its emphasis on prediction and explained variance (Hair et al., 2022). Higher-order constructs were estimated using the repeated indicators approach. Measurement quality was evaluated through reliability, convergent validity, and discriminant validity assessments, while the structural model was assessed using path coefficients, bootstrapped significance tests, coefficients of determination (R^2), and predictive relevance (PLSpredict).

4. Results

The results of the measurement model evaluation indicate that all constructs demonstrate satisfactory levels of reliability and validity. Composite reliability and Cronbach's alpha values exceed recommended thresholds, and Average Variance Extracted (AVE) values support convergent validity. Discriminant validity is confirmed using the HTMT criterion (Henseler et al., 2015). The formative dimensions of firm performance (financial, customer, internal processes, learning and growth) exhibit significant weights and acceptable variance inflation factors, confirming the appropriateness of the BSC specification.

Structural model results reveal several significant relationships. Intellectual capital has a positive and significant direct effect on firm performance, indicating that firms with stronger human, structural, and relational capital achieve superior performance outcomes. Intellectual capital also has a positive and significant effect on competitive advantage, suggesting that intangible resources contribute to strategic differentiation. Knowledge management exhibits a strong positive direct effect on firm performance, as well as a positive and significant effect on competitive advantage, highlighting the strategic importance of systematic knowledge processes. Furthermore, competitive advantage positively and significantly affects firm performance, confirming its role as a key driver of both financial and non-financial outcomes.

With respect to mediation, the results show an asymmetric pattern. The indirect effect of intellectual capital on performance through competitive advantage is not statistically significant, indicating that competitive advantage does not mediate the relationship between intellectual capital and

performance. In contrast, the indirect effect of knowledge management on performance through competitive advantage is positive and significant, while the direct effect of knowledge management on performance remains significant. This pattern provides evidence of partial mediation, suggesting that knowledge management enhances performance both directly and indirectly by strengthening competitive advantage.

The explanatory power of the model is substantial. The combined effects of intellectual capital, knowledge management, and competitive advantage explain a significant proportion of variance in firm performance, while intellectual capital and knowledge management together explain a considerable share of variance in competitive advantage. Predictive assessment using PLSpredict indicates that the model demonstrates satisfactory out-of-sample predictive capability relative to a benchmark linear model (Hair et al., 2022).

5. Discussion and Conclusion

The findings provide nuanced support for RBV-based explanations of performance in knowledge-based firms. Intellectual capital emerges as a critical resource that directly enhances firm performance and contributes to competitive advantage. However, the absence of a significant mediation effect suggests that the performance benefits of intellectual capital may be realized primarily through internal organizational mechanisms, such as improved learning capacity, decision-making quality, and process efficiency, rather than exclusively through externally perceived competitive advantage. This insight refines RBV arguments by highlighting that not all intangible resources exert their influence on performance through the same strategic pathways.

Knowledge management, by contrast, plays a distinctive conversion role. The results indicate that knowledge management not only improves performance directly but also strengthens competitive advantage, which in turn enhances performance. This finding aligns with knowledge-based perspectives suggesting that knowledge yields strategic value when it is systematically captured, transformed, and applied through organizational processes (Gold et al., 2001; Andreeva & Kianto, 2011). In this sense, knowledge management functions as a dynamic capability that transforms dispersed knowledge into market-relevant advantages.

From a managerial perspective, the results imply that knowledge-based firms should invest simultaneously in developing intellectual capital and institutionalizing effective knowledge management practices. While intellectual capital development may generate immediate internal performance benefits, knowledge management systems are essential for converting knowledge resources into sustainable competitive advantage and long-term performance gains.

This study contributes to the literature in several important ways. Theoretically, it advances RBV by empirically distinguishing between the

performance pathways of intellectual capital and knowledge management. The findings demonstrate that while both constructs are valuable intangible resources, knowledge management more consistently operates as a mechanism that converts knowledge into competitive advantage, whereas intellectual capital can improve performance through internal value-creation processes without necessarily relying on competitive advantage as a mediator. This distinction enriches RBV and knowledge-based theories by clarifying how different knowledge-related resources function within organizations.

Methodologically, the study contributes by employing a BSC, multidimensional measure of firm performance within a hierarchical PLS-SEM framework. This approach captures both financial and non-financial outcomes and is particularly well-suited to knowledge-based firms, where learning, internal processes, and customer outcomes are leading to indicators of long-term success.

Practically, the findings offer actionable insights for managers and policymakers in knowledge-based sectors. Firms can enhance performance by strengthening intellectual capital through human resource development, structural investments, and relational networks, while simultaneously leveraging knowledge management processes to translate these resources into defensible competitive advantages. In RBV terms, the study demonstrates how knowledge-based firms can create conditions of imperfect competition by effectively mobilizing internal intangible resources, thereby achieving superior performance in dynamic and competitive environments.

Keywords: Intellectual capital; Knowledge management; Competitive advantage; Firm performance; Resource-Based View.