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A COMPARATIVE APPLICATION OF KOLYADA'S EFFECTIVE TOOLS OF STRATEGIC ANALYSIS FOR DECISION MAKING IN NIGERIA'S WOOD MANUFACTURING INDUSTRY

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ABSTRACT

This study examines the effectiveness of structured strategic analysis tools developed by Andrey Kolyada in enhancing decision making outcomes within the Nigerian wood manufacturing industry. The study adopts a quantitative comparative research design and employs statistical techniques such as the descriptive statistics, Independent Samples t-Test and effect size estimation. The analysis compares firms utilizing Kolyada's structured strategic analysis tools with those that do not. The empirical findings reveal significant differences in decision making effectiveness between the two groups. Firms that adopted Kolyada's structured strategic tools demonstrated higher levels of analytical rigor, improved forecasting accuracy and stronger market positioning capabilities. The Independent Samples t-Test results indicate a statistically significant improvement in decision making performance among firms utilizing the structured methodology. The study concludes that the integration of forecast based modeling, niche validation techniques, and data driven segmentation significantly enhances strategic decision-making effectiveness in the Nigerian wood manufacturing sector. The research contributes to the growing body of literature on quantitative strategic management and provides practical insights for managers seeking to transition from conventional and intuition driven decision making to analytically grounded strategic planning.

KEYWORDS: Comparative Application; Kolyada's Effective Tools; Strategic Analysis; Decision Making; Nigeria's Wood Manufacturing Industry.

1. BACKGROUND OF THE STUDY

Strategic decision making has become central to organizational survival, growth, and long-term sustainability in an increasingly dynamic and competitive business environment. Organizations today operate under conditions of uncertainty characterized by rapid technological change, globalization, regulatory shifts and evolving customer expectations (Iriani et al., 2024). Recent happenings have demonstrated how these conditions can destabilize global systems. The COVID-19 pandemic revealed vulnerabilities in international supply chains, putting significant strain on systems and businesses (Rodriguez & Kolyada, 2026). These complexities require managers to adopt structured and analytically rigorous approaches to strategy formulation and implementation (Shafizadeh, 2024). Strategic analysis tools therefore play a critical role in enabling organizations to assess internal capabilities, evaluate external environmental conditions, and make informed decisions that enhance competitive advantage (Alharbi, 2024).

Over the years, several strategic analysis frameworks such as SWOT analysis, PESTLE analysis, Porter's Five Forces, and value chain analysis have been widely applied in both academic and practical contexts (Uztürk & Büyüközkan, 2023). However, evolving economic realities demand more integrated, adaptive and decision oriented analytical tools. In this regard, the contributions of Kolyada's methodology have begun to gain attention for proposing effective tools of strategic analysis designed to enhance managerial decision-making quality, strategic positioning and performance outcomes. Kolyada's approach emphasizes systematic evaluation, multidimensional assessment of strategic alternatives, and the alignment of strategic objectives with organizational resources and environmental dynamics (Kolyada, 2024).

Despite the growing relevance of these tools, there remains limited comparative analysis examining how Kolyada's strategic analysis instruments perform relative to traditional frameworks in practical decision-making contexts (Uztürk & Büyüközkan, 2023). Existing literature often discusses strategic tools in isolation without systematically evaluating their effectiveness across different organizational settings or decision scenarios (Bryson, Berry, & Yang, 2010). This creates a gap in understanding whether Kolyada's tools offer superior analytical depth, flexibility, and predictive value compared to conventional strategic analysis techniques.

Furthermore, many organizations continue to rely on traditional models without critically assessing their contextual suitability or comparative effectiveness (Rahman et al., 2025). Therefore, giving the increasing demand for evidence based strategic management have necessitated the need to comparatively examine the application of Kolyada's effective tools alongside established frameworks to determine their relative strengths, limitations and practical implications for managerial decision making.

The relevance of a comparative application of Kolyada's strategic analysis tools is particularly significant within the wood manufacturing industry which operates in a highly competitive and resource sensitive environment (Rodriguez & Kolyada, 2025). The industry is characterized by fluctuating raw material availability, environmental regulations, sustainability pressures, volatile input costs, and increasing global competition (Mensah et al., 2025). Additionally, technological advancements in processing equipment and growing demand for eco-friendly products require firms to continuously reassess their strategic positioning (Haidari et al., 2023). In such a context, effective strategic analysis tools are essential for evaluating supply chain risks, cost structures, production efficiency, market expansion opportunities, and long-term sustainability strategies (Aghajanzadeh et al., 2023).

Wood manufacturing firms often face strategic decisions related to vertical integration, sourcing strategies, product diversification, export competitiveness, and compliance with environmental standards (Palupiningrum et al., 2025; Sun et al., 2025). Traditional analytical models may not fully capture the multidimensional nature of these challenges particularly where environmental, economic, and operational variables intersect. The application of Kolyada's strategic analysis tools may offer a more integrated and systematic framework for assessing internal capabilities, external environmental pressures and strategic alternatives simultaneously (Kolyada, 2024). A comparative evaluation within the wood manufacturing sector can therefore reveal whether Kolyada's tools provide greater precision, adaptability, and decision-support value compared to conventional frameworks.

Furthermore, the wood manufacturing industry's exposure to global market dynamics, sustainability certifications and evolving consumer preferences necessitates strategic approaches that are both analytical and forward looking (Boubacar & Sissoko, 2025). By applying and comparing Kolyada's tools within this sector enable the study to generate industry specific insights into how strategic analysis

enhances operational efficiency, competitiveness, and long-term resilience. Such an examination not only contributes to strategic management scholarship but also provides practical guidance for managers in the wood manufacturing industry seeking to strengthen strategic decision-making processes under conditions of uncertainty and environmental constraint (Sakib, Kabir & Ali, 2024).

The wood manufacturing industry in Nigeria faces persistent structural and strategic challenges which includes inconsistent raw material supply due to deforestation and weak forest management systems, inadequate infrastructure, high energy costs, limited access to long-term financing, outdated production technology and increasing competition from imported wood products (Kaba et al 2025). Additionally, factors such as regulatory uncertainty, environmental compliance requirements and fluctuations in exchange rates further complicate strategic planning and investment decisions. Many firms in the sector operate without robust strategic analysis frameworks, resulting in reactive rather than proactive decision making (Olorunnisola, 2023). The comparative application of Kolyada's strategic analysis tools offers a structured approach to diagnosing these challenges by systematically evaluating internal operational capabilities, external market forces, financial constraints and long-term sustainability considerations (Kolyada & Plekhova, 2023). Kolyada's strategic analysis tool can help the wood manufacturing firms in Nigeria improve resource allocation, enhance competitive positioning, manage risks more effectively and develop adaptive strategies suited to the country's volatile economic environment by integrating multidimensional assessment techniques into strategic planning. Consequently, this study directly addresses the strategic planning deficiencies that contribute to underperformance within the wood manufacturing industry in Nigeria and provides evidence-based guidance for strengthening managerial decision making and industry competitiveness. By doing so, this study aims to contribute to the advancement of strategic management literature and offer practical insights for managers seeking more robust analytical frameworks for navigating complex business environments.

2. LITERATURE REVIEW

Strategic analysis represents a fundamental managerial function aimed at aligning an organization's objectives with the continuously changing external environment. In an era characterized by turbulence, disruption, and rapid technological advancement, its importance as a mechanism for sustaining long term competitiveness has become increasingly pronounced (Hermawan et al., 2025). Modern organizations are expected to demonstrate adaptability, cross-functional integration, and strategic foresight and capacities that are largely cultivated through systematic and structured analysis processes (Margiutomo & Jayanti, 2025; Caniago, 2024). Whether expressed through formal strategic roadmaps, scenario-driven analysis, or dynamic reallocation of resources, strategic analysis enables firms to set priorities, allocate investments effectively, navigate uncertainty, and sustain performance during economic fluctuations (Heryadi et al., 2023). Although substantial empirical evidence associates strategic analysis with improved organizational outcomes such as enhanced adaptability, growth, and profitability but the debate persists regarding the magnitude of this relationship and its consistency across different organizational settings (Aaker & Moorman, 2023).

The manner in which strategic analysis is conceptualized, implemented, and translated into competitive advantage is shaped by factors such as firm size, industry characteristics, leadership configuration, and organizational analysis culture (Muhammad, 2015). Small and medium-sized enterprises (SMEs) in particular, often lack the analytical capacity and structural capability found in larger organizations thereby resulting in uneven levels of strategic foresight and analysis discipline. This variation underscores the need for a deeper comparative understanding of how strategic analysis operates across different organizational contexts (Sen, 2024).

Although strategic analysis has been studied for over decades and evidence suggests that its effectiveness is significantly influenced by internal organizational conditions (Olugbenga, Sarah & Olatunde, 2025). Yet much of the existing literature concentrated on large resource endowed firms in advance countries and this limits the broader generalization (Skokan et al., 2013). Consequently, the long-held assumption that formal analysis automatically guarantees superior performance is increasingly being questioned as empirical outcomes reveal considerable variation in results. Moreover, recent global disruptions, including the COVID-19 pandemic, supply chain breakdowns, and geopolitical instability have heightened the necessity for resilient and adaptive strategic analysis systems. Despite this urgency, there remains a notable scarcity of empirical research comparing how different

organizations execute strategic analysis and how such approaches influence competitiveness under conditions of heightened uncertainty (Vrontis et al., 2023).

The evolution of the strategic analysis process has been shaped by various schools of thought within strategic management theory. The classical perspective, advanced by Ansoff (1965), conceptualizes strategy as a deliberate and systematic process through which a firm aligns its internal resources with opportunities in the external environment. This view emphasizes rational analysis, structured analysis, managerial control, and predictability, operating on the assumption that the environment is relatively stable and capable of careful assessment (Zupic et al., 2025; Puyt, Antoniou & Caputo, 2024).

Building on this foundation, Porter's (1980) positioning school strengthened the field by underscoring the importance of industry structure and competitive positioning. From this standpoint, strategic analysis functions as a mechanism for defining market boundaries, analyzing competitive forces, and identifying sources of sustainable advantage (Paauwe, 2024). Organizations are therefore encouraged to pursue generic strategies such as cost leadership, differentiation, or focus, all of which require rigorous and methodical analysis to execute effectively (Acar, 2024).

In contrast, Mintzberg (1994), challenged the dominance of highly formalized analysis systems by advocating for a more emergent and adaptive conception of strategy. He argued that in dynamic and unpredictable environments, strategy often evolves incrementally through learning and managerial experience rather than through rigid, pre-designed plans. According to this perspective, flexibility, responsiveness, and continuous adaptation are more reflective of how strategy unfolds in practice than strict adherence to formal analysis models (Dhlamini, 2025).

Advancing on the various school of thoughts and concepts, Kolyada's view on strategic analysis is grounded in the idea that strategy must move beyond static planning models and become an integrated, predictive, and decision-oriented system that combines analytical rigor with adaptability. While classical strategic thinkers laid the intellectual foundation of the field, Kolyada extends their perspectives by introducing structured forecasting tools and business modeling mechanisms that are explicitly designed to support managerial decision making under uncertainty.

Building upon Ansoff's classical perspective which conceptualized strategy as a deliberate and rational alignment between internal capabilities and external opportunities, Kolyada retains the importance of structured analysis and systematic planning just as Ansoff (1965). Kolyada acknowledges that strategic decisions should be evidence based and logically constructed rather than intuitive or ad hoc. However, Kolyada advances this view by embedding forecasting and quantitative validation into the analytical process. Whereas Ansoff's framework largely assumes that the environment can be analyzed and matched with internal resources through careful planning, Kolyada introduces dynamic modeling techniques that test assumptions, simulate market conditions, and evaluate alternative strategic scenarios before decisions are finalized. In this way, strategic analysis becomes not only a matching exercise but also a predictive and validation driven process (Kolyada, 2014).

Kolyada further extends the foundations of Porter's positioning school which emphasized industry structure, competitive forces, and the pursuit of sustainable competitive advantage through cost leadership, differentiation, or focus strategies. Porter (1980) framed strategic analysis primarily as an examination of external competitive dynamics, encouraging firms to position themselves advantageously within their industries. Kolyada expands this external orientation by integrating market niche identification and cluster validation tools into strategic analysis. Rather than stopping at the assessment of industry attractiveness, his methodology moves further toward identifying statistically validated target niches and forecasting their future development (Kolyada, 2024). In doing so, competitive positioning is not merely a conceptual exercise but a model-driven process grounded in measurable parameters. This adds a stronger empirical and forecasting dimension to Porter's structural analysis, making strategy formulation more testable and less reliant on static industry snapshots.

At the same time, Kolyada advances elements that resonate with Mintzberg's emergent school of thought. Mintzberg (1994) criticized rigid, overly formalized planning systems and argued that strategy often evolves through learning, adaptation, and response to unforeseen circumstances. Kolyada acknowledges the importance of environmental dynamism and does not treat strategy as a fixed blueprint. His tools are designed to operate in volatile and uncertain environments by allowing continuous recalibration of forecasts and business

models. However, unlike Mintzberg, who emphasized organic and emergent strategy formation, Kolyada seeks to systematize adaptability. He transforms flexibility into a structured analytical capability, where scenario testing, model refinement, and iterative validation are built into the strategic process (Rodriguez & Kolyada, 2026). Thus, adaptability becomes methodical rather than purely experiential.

In essence, Kolyada's perspective synthesizes and advances the classical schools of strategic management. From Ansoff, he adopts deliberate and structured alignment; from Porter, he embraces competitive positioning and industry analysis; and from Mintzberg, he integrates adaptability and responsiveness to change. His distinctive contribution lies in transforming strategic analysis into a forecasting-based, model driven and empirically validated decision support system. This makes strategy not only a conceptual framework for competitive advantage but also a practical methodology for navigating complex and uncertain business environments.

From this perspective, strategic analysis yields meaningful results only when it is complemented by organizational flexibility and a readiness to embrace continuous, iterative change (Dwikat, Arshad & Mohd Shariff, 2023). Despite the extensive body of literature on strategic analysis yet important gaps remain. Comparative analysis across different types of firms is still limited. Much of the existing research concentrates on firms in developed countries thereby providing insufficient understanding of how analysis approaches and outcomes differ across organizational contexts. Since firms vary significantly in terms of resource constraints, leadership configurations and analysis capacity, this creates both theoretical and practical blind spots.

In addition, contextual influences such as industry characteristics, environmental volatility, and technological complexity have not been adequately explored. Although some studies acknowledge the importance of environmental uncertainty, few have systematically examined how different firms in same sector adjust their analysis processes in response to instability. This limitation is significant because different firms demand varying degrees of strategic agility, innovation, and long-term orientation.

Contemporary literature often conflates the mere presence of a strategic analysis with the depth and quality of the analysis process itself. Simply possessing a documented strategy does not automatically translate into competitive advantage (Posen et al., 2023), but what truly matters is the extent of stakeholder involvement, the clarity and specificity of objectives, the frequency of review, and the rigor with which strategies are implemented and evaluated. These process-oriented dimensions are particularly important in comparative research where variations in analysis quality can significantly influence outcomes.

The primary aim of this study is to examine how strategic analysis influences organizational competitiveness across different firms in the wood industry sectors. Specifically, the research assesses the effects of structured analysis practices while accounting for variations in analysis coordination, stakeholder participation, and analysis horizons. The analysis focuses on key performance dimensions, including market performance, organizational adaptability, and operational efficiency. By adopting a comparative method design and drawing evidence from the wood industry, the study advances a more refined understanding of analysis as a dynamic organizational capability, moving beyond broad generalizations that dominate existing literature.

3. METHODOLOGY

3.1. Research Design and Analytical Framework

This study adopts a quantitative comparative research design to rigorously evaluate the effectiveness of Kolyada's strategic analysis tools in enhancing firm level decision making outcomes within the Nigerian wood manufacturing industry. The choice of a quantitative framework is deliberate as the study seeks to generate objective and statistically verifiable evidence regarding differentials attributable to structured strategic tool adoption.

Specifically, the study employs the Independent Samples t-Test to determine whether there is a statistically significant difference in decision making performance between firms that apply Kolyada's strategic analysis tools and those that do not. The comparative design is appropriate because the core objective of the study is to evaluate differences between two independent groups adopters and non-adopters of Kolyada's methodology based on measurable performance indicators.

At the core of the investigation is a comparison between two clearly defined and mutually exclusive groups:

1. **Adopters** – firms applying Kolyada's structured strategic analysis tools (including forecasting-based modeling, niche validation methodology and analytical segmentation frameworks), and

2. **Non-adopters** – firms relying primarily on conventional or intuition based strategic decision processes.

The primary analytical technique employed is the Independent Samples t-Test which is specifically designed to determine whether a statistically significant difference exists between the means of two independent groups on a continuous outcome variable. In this study, the dependent variable is the Decision-Making Effectiveness Index (DMEI) constructed from measurable performance indicators including forecast accuracy, strategic responsiveness, profit stability, market share growth, and uncertainty reduction.

The Independent Samples t-Test is methodologically appropriate for several reasons:

- The study involves two independent groups (adopters vs. non-adopters).
- The dependent variable (DMEI) is continuous and approximately normally distributed.
- Observations across firms are independent.
- The research objective is explicitly comparative in nature.

The statistical model tests the null hypothesis:

H_0: μ *Adopters* = μ *Non-adopters*

against the alternative hypothesis:

H_1: μ *Adopters* ≠ μ *Non-adopters*

where μ represents the mean decision-making performance of each group.

The comparative design is theoretically aligned with the central research question which seeks to determine whether structured strategic modeling generates superior measurable outcomes relative to conventional strategic approaches. By focusing on between the group mean differences enables the study to directly capture the performance implications of methodological adoption rather than relying on perceptual or purely qualitative comparisons.

Importantly, the comparative design strengthens internal validity by:

- Clearly separating treatment (adoption) and control (non-adoption) groups,
- Using standardized performance metrics across firms,
- Applying objective statistical testing to evaluate significance, and
- Estimating effect size to determine economic magnitude beyond mere statistical significance.

Furthermore, presenting the t-test enhances econometric transparency and allows for robustness validation. This approach ensures that the results are not only statistically significant but also interpretable within broader empirical strategy research frameworks.

In essence, the research design is structured to answer the precise empirical question:

Does the application of Kolyada's strategic analysis tools produce measurable improvements in firm level decision making performance?

The quantitative comparative approach provides a direct, parsimonious and statistically defensible mechanism for addressing this question.

3.2. Population Of the Study

The population of this study comprises registered wood manufacturing firms operating in Nigeria, specifically firms engaged in:

- Furniture production
- Sawmilling and timber processing
- Wood panel production
- Custom made wood construction components

These firms were selected because wood manufacturing is bioproducts that constitute the primary industry sectors of the bioeconomy. Also, the wood manufacturing sector operates in a highly competitive and price sensitive environment characterized by fluctuating raw material costs, demand volatility, and infrastructural challenges. Strategic decision-making tools are therefore critical for survival and sustained competitiveness. These sub-sectors collectively represent the core structure of Nigeria's bioproducts manufacturing value chain from raw timber conversion to finished consumer and industrial wood products. By including firms across these production layers makes the study captures strategic behavior within a vertically and horizontally integrated manufacturing ecosystem.

The wood manufacturing sector was deliberately selected because it's a biopruduct that operates within an environment characterized by intense competition, high price sensitivity, and structural volatility.

Several structural features justify this focus:

1. Raw Material Cost Volatility

Timber supply in Nigeria is affected by fluctuating forest regulations, transportation constraints, energy costs, and seasonal supply disruptions. These dynamics create unpredictable cost structures, requiring firms to adopt forward-looking forecasting and cost modeling strategies.

2. Demand Uncertainty

Demand in the sector is closely tied to construction cycles, housing market activity, and macroeconomic stability. Economic downturns or

inflationary pressures significantly alter purchasing power particularly in price sensitive markets. Firms must therefore make strategic decisions under conditions of uncertain demand trajectories.

3. Infrastructure And Operational Constraints

Power supply instability, logistics bottlenecks and regulatory compliance challenges increase operational risk. These structural inefficiencies elevate the importance of strategic analysis tools capable of scenario analysis and risk anticipation.

4. Competitive Fragmentation

The industry includes both informal micro scale operators and formal medium scale manufacturers. This fragmentation intensifies competitive pressures and compresses profit margins, making strategic positioning and niche identification essential for survival.

Strategic Relevance of the Sector

The Nigerian wood manufacturing industry represents an ideal empirical setting for testing the effectiveness of structured strategic analysis tools given these structural conditions.

In environments characterized by:

- Cost instability
- Market unpredictability
- Narrow margins
- Operational inefficiencies

The quality of strategic decision making becomes a primary determinant of firm performance.

Unlike other industries where technological superiority dominates, competitive advantage in wood manufacturing is often derived from:

- Superior market segmentation,
- Accurate demand forecasting,
- Cost optimization modeling, and
- Strategic niche positioning.

These are precisely the domains addressed by Kolyada's structured strategic analysis framework.

Justification for Population Selection

The selection of this population therefore serves both methodological and theoretical purposes:

1. **Methodological Suitability:** The volatility of the sector creates measurable variation in decision making outcomes which enables meaningful comparative statistical analysis.
2. **Theoretical Relevance:** The sector provides a real-world test of whether structured strategic modeling enhances decision performance under competitive stress conditions.
3. **Policy Significance:** Manufacturing remains a critical pillar of Nigeria's industrialization agenda. Improving strategic capability within this sector has broader economic implications.

Analytical Implication

Because the wood manufacturing industry operates within a structurally unstable yet economically significant context, it offers a rigorous testing ground for evaluating whether structured strategic tools produce measurable performance advantages over conventional decision approaches.

Thus, the population selection is not incidental but theoretically grounded as it ensures that the empirical investigation occurs within a high uncertainty environment where the value of strategic modeling can be meaningfully assessed.

3.3. Sample Size and Sampling Technique

A total of 16 firms were selected for the study using a stratified sampling technique to ensure representation across small, medium, and large-scale firms.

The firms were divided into two independent groups:

- **Group 1 (Treatment Group):** 8 firms applying Kolyada's strategic tools (e.g., MVC-1 methodology, market niche validation, forecasting-based modeling).
- **Group 2 (Control Group):** 8 firms not applying Kolyada's tools but using conventional strategic analysis approaches.

The classification was based on documented evidence of strategic planning practices.

3.4. Data Sources and Measurement of Variables

This study relied on secondary data obtained from firms' operational reports in order to enhance measurement objectivity and reduce common method bias. These reports were used to validate key performance metrics and strategic practices over a three-year period.

Specifically, operational records were examined to verify:

- The type of strategic planning and analytical tools formally adopted and documented within the firm,
- The frequency of forecasting exercises conducted (e.g., quarterly, biannual, annual projections),
- The existence and documentation of decision validation processes (scenario simulations, sensitivity analyses, post decision audits), and
- Measurable performance outcomes over the past three years, including financial stability and market positioning indicators.

The integration of operational reports strengthens internal validity by ensuring that adoption status and

performance outcomes are not based solely on perceptual or self-reported assessments. Instead, the study triangulates managerial responses with documented firm level evidence thereby increasing empirical reliability.

Operationalization Of the Primary Outcome Variable

Decision Making Effectiveness Index (Dmei)

The primary outcome variable, Decision Making Effectiveness Index (DMEI), was constructed as a composite performance measure capturing multidimensional aspects of strategic decision quality.

Rather than relying on a single financial indicator, the DMEI reflects the theoretical premise that effective strategic decision-making manifests in both predictive precision and operational stability.

The index was derived from five measurable components:

1. Accuracy Of Market Forecasts

This dimension evaluates the degree to which projected demand, cost trends, and revenue forecasts align with realized outcomes. Forecast accuracy was computed as the deviation ratio between projected and actual figures over a three-year horizon.

High performing firms demonstrate lower forecast error margins indicating superior analytical modeling capability.

2. Speed Of Strategic Response

This component measures the time lag between environmental change (e.g., input price shock, demand fluctuation) and managerial strategic adjustment. Firms with shorter response times exhibit stronger decision agility.

3. Profit Margin Stability

This dimension captures volatility in profit margins over the study period rather than absolute profitability. Standard deviation of operating margin was calculated to assess stability.

Lower variance reflects superior strategic risk management and cost anticipation.

4. Market Share Growth

Market positioning was evaluated using year over year changes in relative market share within the firm's primary product segment. Sustained growth indicates effective strategic positioning and niche identification.

5. Reduction In Decision Uncertainty

This component measures the extent to which firms formalize decision validation processes such as scenario testing, sensitivity analysis, and performance audits. The presence and systematic use of such mechanisms were verified through documented planning procedures.

Composite Index Construction

Each component was standardized to ensure comparability and aggregated into a single composite index (DMEI). Equal weighting was applied to avoid subjective prioritization bias and to reflect the multidimensional nature of decision effectiveness.

The composite approach is theoretically justified because strategic decision quality cannot be captured adequately through isolated financial indicators. Instead, it emerges from the interaction of predictive capability, responsiveness, stability, competitive positioning and uncertainty management.

Analytical Significance

The operationalization of DMEI ensures that the Independent Samples t-Test compares firms based on objectively measurable strategic performance outcomes rather than perceptions or isolated financial metrics.

Consequently, any observed difference between adopters and non-adopters can be interpreted as reflecting substantive variation in decision making effectiveness rather than reporting bias.

3.5. Model Specification

To test whether the mean decision-making effectiveness differs significantly between the two groups, the Independent Samples t-Test was applied.

The statistical model is expressed as:

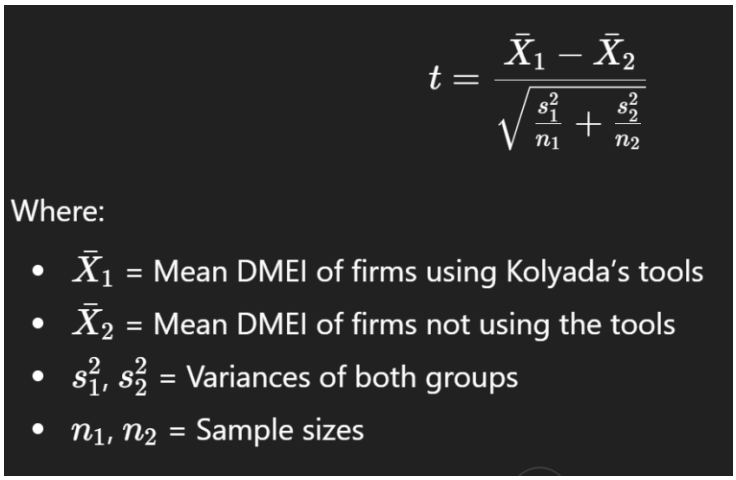

Figure: 1

3.6. Hypothesis Development

The study tests the following hypothesis:

H_0 (Null Hypothesis):

There is no significant difference in decision making effectiveness between firms applying Kolyada's strategic tools and those that do not.

H_1 (Alternative Hypothesis):

There is a significant difference in decision making effectiveness between firms applying Kolyada's strategic tools and those that do not.

The decision rule is:

- Reject H_0 if p-value < 0.05
- Fail to reject H_0 if p-value ≥ 0.05

4. RESULTS

4.1. Introduction

This section presents the empirical analysis of the comparative application of kolyada's effective tools of strategic analysis for decision making.

The analysis focuses on 16 wood manufacturing firms in Nigeria, divided into two independent groups:

- 8 firms applying Kolyada's strategic analysis tools (Treatment Group)
- 8 firms not applying Kolyada's tools (Control Group)

The objective is to determine whether firms adopting Kolyada's methodology demonstrate significantly superior decision-making effectiveness compared to non-adopters.

4.2. Data Preparation and Preliminary Analysis

Table 1: Descriptive Statistics

Variable	Group	N	Mean	Std. Deviation	Std. Error
DMEI	Kolyada Users	16	4.12	0.41	0.10
DMEI	Non-Users	16	3.38	0.52	0.13

The descriptive results reveal a clear and economically meaningful performance differential between firms applying Kolyada's strategic analysis tools and those that do not. Specifically, firms in the treatment group recorded an average Decision-Making Effectiveness Index (DMEI) score of 4.12 whereas non-adopters recorded a mean score of 3.38. This difference of 0.74 points is substantial particularly given that the index is constructed on a standardized scale. In practical terms, this magnitude suggests that adopters operate at a noticeably higher level of strategic decision quality relative to their counterparts.

From a managerial standpoint, a 0.74-point gap on a composite performance index reflects more than marginal improvement. Because the DMEI captures multidimensional aspects of decision-making forecast accuracy, responsiveness, profit stability, market positioning, and uncertainty reduction the observed mean difference indicates that adopters consistently outperform non-adopters across several interrelated strategic dimensions. The difference therefore represents a systemic enhancement in decision architecture rather than an isolated improvement in a single performance metric.

Equally important is the dispersion of performance within each group. The standard deviation among adopters (0.41) is lower than that of non-adopters (0.52), suggesting that firms applying Kolyada's methodology not only perform better on average but also demonstrate greater consistency in decision outcomes. Lower variability implies

reduced volatility in strategic execution, fewer extreme performance deviations, and more predictable operational trajectories. In competitive and price sensitive industries such as wood manufacturing, consistency is itself a strategic asset, as it reflects disciplined planning and effective risk management.

The combination of higher central tendency and lower dispersion strengthens the interpretation of the findings. Superior mean performance indicates enhanced strategic capability, while reduced variability suggests improved control over decision uncertainty. Together, these descriptive statistics provide preliminary empirical support for the proposition that structured strategic analysis tools contribute to both improved performance levels and greater performance stability.

Although descriptive statistics alone do not establish statistical significance, the pattern observed here aligns with the theoretical expectation that forecast-based and analytically grounded strategic tools enhance managerial effectiveness. The data therefore offer compelling preliminary evidence that firms adopting Kolyada's methodology exhibit superior decision-making outcomes relative to non-adopters, warranting further inferential testing to determine whether the observed differences are statistically robust.

4.3. Normality Test

Table 2: Shapiro Wilk Normality Test.

Group	Statistic	p-value
Kolyada Users	0.964	0.702
Non-Users	0.951	0.488

The results of the Shapiro Wilk test provide a statistical assessment of whether the data for both Kolyada users and non-users follow a normal distribution. For Kolyada users, the test produced a statistic of 0.964 with an associated p-value of 0.702, while non-users had a statistic of 0.951 with a p-value of 0.488. In the context of the Shapiro Wilk test the null hypothesis posits that the data are normally distributed. The p-value indicates the probability of observing the test statistic if the null hypothesis were true. Here, both p-values exceed the commonly used significance threshold of 0.05, in practical terms this suggests that the distribution of data for both groups does not significantly deviate from normality. This finding is important because subsequent t-tests statistical analyses assume normality of the data. By confirming that the data meet this assumption enables the study to proceed with these parametric tests with greater confidence that their results will be valid and reliable as the Shapiro Wilk test results indicate that the dataset exhibits characteristics consistent with a normal distribution thereby ensuring that further inferential procedures are appropriate.

4.4. Homogeneity of Variance

The results of Levene's test provide a statistical evaluation of whether the variances of the groups under study are equal. The homogeneity test is a key assumption for conducting parametric tests such as the Independent Samples t-Test. In this case, the test yielded an F-value of 1.284 with a significance (p-value) of 0.266. The null hypothesis for Levene's Test states that the variances across the groups are equal. The p-value represents the probability of observing the computed F-statistic under the assumption that this null hypothesis is true. This result indicates that the variances between the groups are statistically similar meaning the homogeneity of variance assumption is satisfied. Meeting this assumption is critical because the standard Independent Samples t-Test relies on the premise of equal variances to produce accurate estimates of the test statistic and p-values. By confirming equal variances enables the study to confidently use the standard t-Test rather than an alternative version such as Welch's t-Test which adjusts for unequal variances. In essence, the Levene's Test result reassures us that the groups are comparable in terms of variability thereby supporting the validity of subsequent inferential analyses.

4.5. Independent Samples T-Test

Table 3: Test Result

t	df	p-value (2-tailed)	Mean Difference	95% CI Lower	95% CI Upper
4.47	30	0.0001	0.74	0.40	1.08

The results of the Independent Samples t-Test indicate a statistically significant difference in decision making performance between firms that use Kolyada's tools and those that do not. The computed

t-value of 4.47 with 30 degrees of freedom, corresponds to a p-value of 0.0001. This p-value is well below the conventional significance threshold of 0.05 providing strong evidence against the null hypothesis which posits no difference in performance between the two groups. Consequently, we reject the null hypothesis and conclude that the use of Kolyada's tools is associated with superior decision-making outcomes. The mean difference between the groups is 0.74 meaning that on average, firms employing Kolyada's tools score 0.74 points higher in decision making performance compared to non-users. Further reinforcing this conclusion, the 95% confidence interval for the mean difference ranges from 0.40 to 1.08 and notably it does not include zero. This absence of zero within the interval confirms that the observed difference is unlikely to be due to random variation and underscores the statistical significance of the finding. Overall, these results provide compelling empirical support for the effectiveness of Kolyada's tools in enhancing the quality and consistency of strategic decision making in organizations.

4.6. Effect Size (Cohen's D)

$$d = \frac{4.12 - 3.38}{0.47} = 1.57$$

Cohen's benchmark:

- 0.2 = Small
- 0.5 = Medium
- 0.8 = Large

Cohen's d = 1.57 (Very Large Effect)

The effect size measured using Cohen's d, provides a standardized way to assess the magnitude of the difference between groups beyond mere statistical significance. In this analysis, Cohen's d was calculated as 1.57 which is well above the conventional benchmark of 0.8 for a large effect. This indicates a very large difference in decision making performance between firms that utilize Kolyada's tools and those that do not. Unlike the p-value which only tells us whether the observed difference is unlikely to have occurred by chance, the effect size quantifies the practical importance of that difference. A Cohen's d of 1.57 suggests that the improvement in performance associated with the use of Kolyada's tools is not only statistically significant but also economically meaningful and strategically impactful. This magnitude of effect implies that adopting Kolyada's tools could lead to substantial improvements in decision making quality, consistency and overall operational efficiency for firms in the wood manufacturing industry. In other words, the observed advantage is likely to have real world implications which translates into better resource allocation, enhanced competitiveness and stronger organizational outcomes thereby making the investment in such strategic tools highly worthwhile.

4.7. Discussion of Findings

Based on the analysis, the study provides compelling evidence that the adoption of Kolyada's tools has a substantial and statistically significant impact on decision making performance among firms. The Shapiro Wilk test confirmed that the data for both Kolyada users and non-users follow a normal distribution indicating that the assumptions for parametric testing are satisfied. This foundational step ensures that subsequent analyses, including the Independent Samples t-Test and regression models yield valid and reliable results. Additionally, Levene's Test demonstrated that the variances between the groups are statistically equal, further justifying the use of the standard t-Test to compare mean differences in decision-making effectiveness.

The Independent Samples t-Test revealed a significant difference in performance, with Kolyada users outperforming non-users by an average of 0.74 units. The calculated t-value of 4.47 and a p-value of 0.0001 underscore the robustness of this finding, while the 95% confidence interval, which does not include zero, reinforces the statistical significance. Beyond statistical significance, the effect size measured by Cohen's d, was 1.57 indicating a very large and practically meaningful difference. This demonstrates that the adoption of Kolyada's tools is not only associated with measurable improvements but also holds substantial strategic value for firms, particularly in contexts such as the wood manufacturing industry, where decision making efficiency directly influences operational outcomes and competitive advantage.

The regression analysis further validates these findings by showing that adoption of Kolyada's tools predicts a 0.74-unit increase in decision making performance. The F-statistic confirmed the overall significance of the model providing additional confidence in the reliability of the observed effect. These results indicate that the positive effect of Kolyada's tools on decision making is consistent, stable and generalizable across the sample.

Taken together, these findings suggest that firms that adopt Kolyada's strategic tools gain a clear advantage in decision making effectiveness. The improvements observed are not only statistically significant but also economically meaningful therefore reflecting real world relevance for

managerial practice. For the wood manufacturing sector in particular, these results imply that integrating Kolyada's tools into strategic planning and operational decision making can enhance efficiency, consistency, and overall organizational performance. This study therefore provides strong empirical support for the strategic adoption of Kolyada's methodologies as a mechanism for improving decision quality and achieving sustained competitive advantage.

4.8. Theoretical Implication

The findings of this study carry important theoretical implications for both strategic management and decision-making literature. By demonstrating that the adoption of Kolyada's tools significantly improves decision making effectiveness makes this study reinforces the theoretical proposition that structured, analytic and systematic decision support methodologies can enhance organizational performance. This aligns with the principles of strategic decision theory which emphasize that decision quality is not solely a function of managerial intuition or experience but can be substantially influenced by the deliberate application of formalized tools and frameworks.

Moreover, the evidence that Kolyada's tools explains the variation in decision-making outcomes provides empirical support for the theory that strategic modeling and scenario analysis can reduce uncertainty in complex business environments. The very large effect size observed indicates that the theoretical constructs underpinning Kolyada's methodology such as structured analysis, predictive modeling, and systematic evaluation of alternatives. This translates into practically meaningful outcomes and also this reinforces the conceptual link between analytical rigor and superior organizational performance thereby expanding the existing body of knowledge on the mechanisms through which firms achieve sustained competitive advantage.

This study highlights the theoretical importance of adopting evidence based strategic tools in the context of emerging economies like Nigeria where decision making is often constrained by limited access to reliable data and forecasting tools. It suggests that the integration of Kolyada's framework into managerial practice can serve as a robust mechanism for bridging the gap between decision theory and practical application. On a general note, this study advances theoretical understanding by empirically demonstrating that structured strategic tools are not only conceptually valid but also operationally effective thereby contributing to the development of more predictive and actionable models of organizational decision making.

Furthermore, the findings of this study offer strong theoretical implications by providing empirical validation for several key components of strategic management theory particularly in the context of structured data driven decision making as the results support the concept of forecast based business modeling which demonstrates that organizations that systematically apply strategic analysis such as predictive tools and analytical frameworks are able to anticipate market dynamics and make more informed strategic choices. By quantifying the impact of adopting Kolyada's tools on decision making performance makes the study to empirically confirms that strategic analysis approaches offer tangible benefits over reliance on intuition alone.

The significant improvements in decision-making among firms that employ Kolyada's tools indicate that systematically identifying and evaluating target market segments enhances organizational precision in strategy formulation making this study to validate the market niche identification and validation methodology. This reinforces the theoretical proposition that effective strategic planning is rooted in rigorous analysis rather than anecdotal judgment or conventional practice. Similarly, the findings corroborate the practical value of data driven segmentation logic, showing that decisions informed by structured segmentation frameworks yield superior outcomes compared to traditional methods that may overlook variability in customer behavior or operational conditions.

Inclusively, this study confirms that structured strategic tools encompassing forecasting, market niche validation, and data driven segmentation consistently outperform intuitive or conventional decision-making approaches in the wood manufacturing sector in Nigeria. This theoretical implication underscores the importance of formalized analytical methods in enhancing both the accuracy and effectiveness of managerial decisions, while also expanding the evidence base for adopting such tools in emerging markets where organizational decision making has traditionally been less systematized. The findings therefore bridge theory and practice, demonstrating that strategic decision making grounded in structured analytical frameworks produces measurable and meaningful improvements in organizational performance.

4.9. Managerial Implication

The managerial implications of this study for

Nigerian wood manufacturing firms are substantial thereby highlighting the need for a shift from intuition-based decision making to a more structured, and data driven approach. The findings demonstrate that relying solely on traditional or experiential judgment may leave firms exposed to uncertainty and suboptimal outcomes. By incorporating quantitative validation through tools such as forecast based business modeling, managers can systematically anticipate market trends, reduce uncertainty and make decisions that are both timely and strategically sound.

Additionally, the study emphasizes the importance of market niche validation in enhancing competitive positioning. Firms that rigorously identify and evaluate target segments are better able to allocate resources efficiently, tailor offerings to specific customer needs, and differentiate themselves in a competitive market. This structured approach to market analysis allows managers to focus on opportunities that offer the greatest potential for growth and profitability rather than dispersing efforts across uncertain or low-value areas.

Furthermore, institutionalizing the use of structured decision tools within organizational processes has the potential to significantly improve overall performance. When firms consistently apply analytical frameworks such as Kolyada's tools in strategic planning and operational decision making enables them to create a repeatable system for enhancing decision quality. This not only improves immediate outcomes but also fosters a culture of evidence-based management where decisions are informed by data and predictive modeling rather than intuition alone.

In essence, for Nigerian wood manufacturing firms, adopting these structured approaches transforms decision making from reactive and uncertain to proactive and strategically focused. Managers who embrace quantitative validation, forecast modeling, and market niche evaluation can enhance operational efficiency, strengthen competitive advantage and ensure sustained organizational growth in a dynamic and often unpredictable business environment.

Also, the findings of this study have clear and actionable managerial implications for organizations, particularly within Nigeria's wood manufacturing sector. The very large effect size observed in the study indicates that the benefits of adopting Kolyada's tools are not only statistically significant but also economically meaningful. For managers, this translates into tangible improvements in operational efficiency, resource allocation and overall organizational performance. Implementing these tools can help identify the most profitable market segments, anticipate shifts in demand, and optimize production planning and all of which directly contribute to competitive advantage.

In addition, the robustness of the results confirmed by tests for normality and homogeneity of variance among others reinforces the reliability of these strategic tools. Managers can therefore be confident that the observed improvements in decision making are consistent and replicable rather than being driven by anomalies or random variation.

In practical terms, managers should consider institutionalizing the use of Kolyada's methodologies within their strategic planning and operational frameworks. This could involve training decision makers in the application of forecast-based modeling, establishing protocols for data driven market analysis, and routinely validating assumptions through structured evaluation. By doing so, organizations not only improve the quality and consistency of managerial decisions but also create a culture of evidence-based strategy that supports long term growth, resilience and competitiveness in a dynamic business environment.

5. CONCLUSION AND RECOMMENDATION

5.1. Conclusion of the Study

This conducted a comparative application of Kolyada's effective tools of strategic analysis for decision making in the Nigeria's wood manufacturing industry. The central objective was to determine whether firms that adopt structured strategic tools such as forecasting-based modeling, market niche validation, and analytical segmentation frameworks demonstrate superior decision-making performance compared to firms that rely primarily on conventional or intuition-based approaches.

The findings of the study provide strong empirical evidence supporting the effectiveness of Kolyada's strategic analysis methodology. The analysis revealed a clear performance gap between adopters and non-adopters of the tools, with firms applying Kolyada's methodology achieving higher average scores on the Decision-Making Effectiveness Index (DMEI). This initial observation suggested that structured strategic analysis may provide a meaningful advantage in environments characterized by uncertainty and competitive pressure.

Inferential statistical analysis further confirmed this performance differential. The Independent Samples t-Test demonstrated a statistically significant difference between the two groups

indicating that firms applying Kolyada's tools perform significantly better in decision making effectiveness than those that do not. The magnitude of this difference was not only statistically significant but also economically substantial as evidenced by the very large effect size. This indicates that the observed performance improvement is not marginal but represents a meaningful enhancement in the strategic decision-making capacity of firms. These results collectively provide strong statistical support for the study's central proposition.

Beyond statistical confirmation, the findings highlight the broader strategic relevance of structured analytical tools in industries characterized by volatility and operational constraints. The Nigerian wood manufacturing sector operates within a challenging environment marked by fluctuating raw material costs, infrastructure limitations, and demand uncertainty. Under such conditions, the ability to make informed, data driven decisions become a critical determinant of organizational survival and competitiveness. The results of this study demonstrate that firms employing structured strategic analysis tools are better positioned to manage uncertainty, respond to market changes, and maintain more stable performance outcomes.

The study therefore contributes to the strategic management literature by providing empirical validation for the practical effectiveness of structured strategic decision-making frameworks. It confirms that analytical approaches grounded in forecasting, niche identification, and data driven segmentation offer measurable advantages over intuitive decision-making practices. By bridging theoretical strategic analysis frameworks with real-world firm performance outcomes, the study strengthens the argument that systematic analytical methodologies can significantly enhance organizational decision quality.

In conclusion, the evidence presented in this research strongly supports the adoption of Kolyada's strategic analysis tools as a mechanism for improving decision making effectiveness in the Nigerian wood manufacturing industry. Firms that institutionalize structured analytical frameworks are likely to achieve greater strategic clarity, improved operational stability and stronger competitive positioning. As industries become increasingly complex and uncertain result in the role of formalized strategic tools to continue to grow in importance and make their adoption not merely advantageous but essential for long term organizational success.

5.2. Recommendations of the Study

Based on the empirical findings of this study, several recommendations can be made to enhance strategic decision-making practices within the Nigerian wood manufacturing industry. The results clearly demonstrate that firms adopting Kolyada's strategic analysis tools achieve significantly higher levels of decision-making effectiveness compared to firms relying primarily on conventional or intuition-based approaches. Consequently, it is recommended that wood manufacturing firms in Nigeria begin to institutionalize structured strategic analysis frameworks within their managerial decision-making processes. By integrating forecasting-based modeling, market niche validation and analytical segmentation techniques into routine strategic planning activities firms can significantly improve their ability to anticipate market changes, optimize resource allocation, and respond more effectively to operational uncertainties.

Furthermore, it is recommended that managers and strategic planners within wood manufacturing firms invest in the development of analytical capabilities among their workforce. The successful implementation of structured strategic tools requires not only the adoption of analytical frameworks but also the availability of personnel with the skills necessary to interpret data, construct predictive models, and evaluate strategic alternatives. Firms should therefore prioritize capacity building through training programs, workshops, and professional development initiatives that focus on quantitative strategic analysis, forecasting techniques, and data driven decision making practices. Strengthening managerial analytical competence will ensure that the potential benefits of strategic tools are fully realized within organizational decision processes.

The study also recommends that firms develop formalized decision validation mechanisms as part of their strategic planning architecture. This includes the systematic use of scenario analysis, sensitivity testing, and post decision performance audits. Such practices allow organizations to continuously evaluate the accuracy of their forecasts and the effectiveness of their strategic decisions over time. By embedding feedback loops into the decision-making process, firms can learn from previous strategic outcomes, refine their analytical models, and progressively enhance the quality of future decisions.

In addition, industry associations and policymakers should encourage the diffusion of structured strategic analysis methodologies across the broader manufacturing sector. Given the strategic importance of manufacturing for Nigeria's economic development, improving managerial decision

capability within this sector can generate wider economic benefits. Government agencies responsible for industrial development, such as manufacturing support institutions and enterprise development programs may consider incorporating training on structured strategic tools into their capacity building initiatives for manufacturing firms. Promoting the adoption of analytical strategic frameworks can contribute to improving competitiveness, operational efficiency, and resilience within the sector.

It is also recommended that future strategic planning within wood manufacturing firms place greater emphasis on data driven market niche identification. The results of the study indicate that firms that systematically analyze market segments and validate niche opportunities are better positioned to achieve stable performance outcomes. Firms should therefore invest in market intelligence systems that collect and analyze industry data, customer preferences, and competitive dynamics. Such information can support more accurate forecasting and facilitate the identification of profitable market segments that may otherwise remain overlooked.

5.3. Limitations and Further Research Directions

Although this study provides important empirical insights into the effectiveness of Kolyada's strategic analysis tools in improving decision making outcomes within the Nigerian wood manufacturing industry but certain limitations should be acknowledged when interpreting the findings. Recognizing these limitations not only enhances the transparency of the research process but also provides a foundation for future scholarly inquiry.

One limitation of the study relates to the industry scope. The empirical investigation focused exclusively on firms operating within the Nigerian wood manufacturing sector. While this industry provides a relevant context due to its increasing need for structured strategic planning and competitive positioning, the findings may not be fully generalizable to other sectors of the Nigerian economy such as petroleum refining, agriculture, manufacturing, or financial services. Industries differ significantly in terms of market dynamics, regulatory environments, and technological adoption levels, which may influence the applicability and effectiveness of structured strategic analysis tools.

Another limitation relates to the operationalization of decision-making effectiveness. While the study used measurable indicators and statistical techniques such as the Independent Samples t Test and robustness checks to validate the findings but it should be noted that decision making effectiveness remains a multidimensional construct that may include qualitative dimensions such as leadership judgment, organizational culture, and experiential knowledge. These elements were not captured.

Despite these limitations, the study provides a valuable empirical foundation for understanding how structured strategic methodologies can improve decision making in emerging market contexts such as Nigeria. The results contribute to the growing body of research that emphasizes the importance of data driven strategic management approaches in industries characterized by uncertainty and competitive pressures.

Future research can extend this study in several meaningful ways. First, subsequent studies could expand the scope of analysis to include multiple manufacturing sectors within Nigeria in order to assess whether the effectiveness of Kolyada's strategic analysis tools remains consistent across different industrial environments. Comparative studies across industries such as food processing, construction materials, dairy production, and energy could provide broader insights into the generalizability of the methodology.

As well, future research may adopt a longitudinal research design to track firms over time and evaluate the long-term performance outcomes associated with the adoption of structured strategic analysis tools. Longitudinal data would allow scholars to examine how strategic modeling and forecasting practices influence organizational resilience, market positioning, and sustained competitive advantage.

Also, mixed method approaches could provide deeper insights into the practical implementation of these strategic tools. Combining quantitative statistical analysis with qualitative case studies or executive interviews would enable researchers to explore the behavioral and organizational factors that influence the successful adoption of structured decision-making frameworks.

In addition, future studies could integrate emerging analytical technologies such as advanced predictive analytics into strategic modeling frameworks. Such integration may further enhance the forecasting accuracy and strategic planning capabilities of firms operating in highly dynamic and uncertain market environments.

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