Monitoring and Evaluation of Enterprise Performance Management Indicators in the Context of Ensuring Competitiveness

Tetiana Kostyshyna
Doctor of Economic Sciences, Full Professor,
Head of the Department of Human Resources Management,
Labor Economics and Economic Theory,
Poltava University of Economics and Trade, Ukraine
E-mail: tkost2017@gmail.com
ORCID: https://orcid.org/0000-0003-4776-5150

Serhii Zhyliakov
Postgraduate Student,
Poltava University of Economics and Trade, Ukraine
E-mail: serhiiz77@gmail.com
ORCID: https://orcid.org/0009-0002-1861-218X

DOI: https://doi.org/10.32782/2707-8019/2025-2-1

Abstract. *The article explores the theoretical and practical aspects of monitoring and evaluating enterprise management indicators within the VUCA environment. The VUCA environment is characterised by volatility, uncertainty, complexity, and ambiguity, and is a defining feature of modern business operations. The acronym VUCA was first coined in the post-Cold War era, yet its components are applicable to both business conditions and the broader global context. The significance of this research lies in its contribution to the enhancement of enterprise adaptability to market challenges through the implementation of effective monitoring systems, controlling practices, and strategic analysis tools. The primary objective of this study is to develop a scientifically grounded methodology for assessing managerial indicators influencing enterprise competitiveness. In order to achieve this, the role of human capital, tax flexibility, and digital transformations will be taken into account. The research employs a range of methodological approaches, including dialectical methodology, comparative analysis, tabular techniques, systems approach, and modelling. The proposed model integrates indicators that appear to be incompatible, thereby bridging the gap between real-time analytics and forward-looking strategic forecasting. This enables a proactive evaluation of enterprise performance. This approach enables businesses to transition from a focus on retrospective analysis to a more proactive stance by integrating operational metrics with strategic foresight. This, in turn, serves to mitigate the impact of uncertainty and preserve competitive advantages. The model was tested on a hypothetical company X (distinct from the former Twitter entity), incorporating financial, organisational, and behavioural performance indicators. The scientific novelty lies in the consistent combination of traditional and digital management tools with predictive analytics based on knowledge of personnel abilities and creativity, optimisation of tax flexibility, which allows for risk prediction and development of an adaptive strategy. The practical significance of the article lies in the proposal of a universal real-time competitiveness assessment system suitable for the effective development of enterprises of various scales.*

Keywords: *competitiveness monitoring, competitiveness assessment, human capital, tax flexibility, predictive analytics, VUCA environment, indicative model.*

JEL Classification: *B41, C52, C53, H21, M54*

1 Introduction

In the contemporary business environment, characterised by significant turbulence, enterprises encountervolatile,uncertain,complex,andambiguous (VUCA) conditions that challenge conventional management methodologies (Trueblood G., 2022). The relevance of this study is explained by the need for businesses to continuously adapt their systems

of strategic monitoring and evaluation to maintain competitiveness under rapidly changing economic, technological, and regulatory conditions.

In light of these developments, it is now widely accepted that a return to a stable "normal" state is improbable, and even the so-called "new normal" cannot be reliably forecasted. In this context, companies are required to adopt new strategic principles that emphasise agility, resilience, and continuous learning.

High volatility means that organisations must be prepared for sudden disruptions and rapid shifts in supply or demand. To respond swiftly to changes and convert unstable situations into opportunities by creating new products or services to meet emerging needs, companies are increasingly adopting agile methodologies, iterative planning, and real-time data analysis (Trueblood G., 2022; Aimar C., & Smith D. K., 2022).

The inherent uncertainty within the VUCA framework poses significant challenges to the process of predicting future trends. This is due to the fact that trends may undergo abrupt shifts, and the occurrence of "black swan" events is a possibility. In order to address this challenge, organisations are increasingly turning to scenario-based "what-if" planning and predictive analytics as management tools. This approach necessitates that companies prepare for high-impact possibilities, even if their likelihood is low, thereby enhancing their readiness (Trueblood G., 2022; Aimar C., & Smith D.K., 2022).

Complexity is defined as the interdependence of events within global systems, which may be illustrated by supply chains, financial networks and digital ecosystems that link businesses and clients. In the pursuit of clarity, organisations endeavour to manage complexity. The streamlining of internal workflows has been demonstrated to have the capacity to eliminate unnecessary intricacy and improve responsiveness (Trueblood G., 2022; Aimar C., & Smith D. K., 2022).

The concept of ambiguity pertains to circumstances in which the interpretation of events is characterised by a lack of clarity, resulting in the presence of multiple interpretations that are equally valid. In a volatile, uncertain, complex and ambiguous (VUCA) environment, the impact of a technological breakthrough or regulatory change may be unclear, potentially leading to misjudgments. Ambiguity has been shown to have a detrimental effect on decision-making processes, particularly in cases where leaders are uncertain how to interpret signals.

Mitigation strategies encompass a range of perspectives, drawing from cross-industry insights or interdisciplinary expertise to assist organisations in viewing an ambiguous issue from multiple angles, thereby enhancing the probability of accurate interpretation (Trueblood G., 2022; Aimar C., & Smith D.K., 2022).

Consequently, strategic management in a VUCA world necessitates a transition from static planning to adaptive strategising. It has been demonstrated that companies that thrive under VUCA conditions often exhibit higher levels of "change fitness", defined as the organisational capacity to rapidly reconfigure structures, processes, and mindsets to meet new realities. The implementation of effective performance monitoring can function as a "compass" for navigating such changes, thereby transforming VUCA challenges into competitive advantages (Fross T., 2022).

Monitoring and control systems are defined as mechanisms by which strategy is translated into measurable goals, execution is tracked, and feedback is provided for decision-making. The classical management control theory posits the principle that "what gets measured, gets managed", thereby signifying that the development of performance indicators exerts a direct influence on organisational behaviour and outcomes.

Contemporary corporate monitoring and control systems place increasing emphasis on real-time data acquisition, predictive insight, and cross-functional integration. It is evident that prominent organisations are adopting Enterprise Performance Management (EPM) solutions, which facilitate continuous planning and agile performance monitoring. For instance, Oracle's cloud-based Enterprise Performance Management (EPM) platform demonstrates how advanced technologies transform monitoring. As posited by Oracle Fusion Cloud (2025), the integration of real-time data into planning is enabled by advanced technologies such as AI, machine learning, and predictive analytics, thereby facilitating the elimination of delays in decision-making by finance teams. This real-time data integration ensures performance dashboards are updated continuously rather than after the close of the day, enabling managers to respond immediately to issues or opportunities. Previously siloed planning functions, such as financial forecasting, operational metrics, sales pipelines and HR planning, are now combined into a unified model (Oracle Fusion Cloud, 2025). This integrated planning approach means that when a key variable changes, its effects on finances, operations and workforce requirements can be modelled holistically within the management system.

However, classical systems may underestimate factors such as human capital potential or the

agility of support functions (e.g., tax strategy), which can significantly impact competitiveness. Furthermore, while numerous systems are in place to track historical performance, fewer have been designed with the explicit purpose of predicting future outcomes or seamlessly integrating with risk management.

This study proposes a novel performance management methodology that integrates traditional financial and operational indicators with forward-looking and intangible factors. In contradistinction to classical systems (e.g., the Balanced Scorecard), which emphasise retrospective or static metrics, the present approach incorporates dynamic human capital assessments, tax flexibility indicators, and AI-driven predictive metrics into the monitoring system (Schrage M., Kiron D., Candelon F., Khodabandeh S., & Chu M., 2024). This integrative approach offers a more comprehensive and proactive perspective on enterprise performance, a concept that has not been adequately addressed in previous literature. The proposed framework integrates real-time analytics and strategic forecasting with performance measurement, thereby assisting enterprises in navigating uncertainty and sustaining competitive advantage.

The present contribution is innovative insofar as it integrates both the human and technological dimensions of performance monitoring, thus reflecting the demands of digital transformation and knowledge-based competition. The aforementioned components are of central importance: human capital assessment, tax flexibility, and predictive analytics.

The main objective is to develop and justify a methodology for monitoring and evaluating enterprise management indicators, with the aim of enhancing strategic decision-making and competitiveness in VUCA conditions.

The theoretical foundation enables the development of a framework that combines qualitative insights with quantitative methods. The subsequent stage of the research project involves the creation of a hypothetical study of Company X, the purpose of which is to model the implementation of the framework. In this instance, a comparative analysis is employed, utilising data tables to simulate the impact of the new monitoring system on key performance outcomes.

The practical research serves as a pragmatic validation of the approach's utility. The synthesis of logical arguments is employed to formulate conclusions and delineate prospective avenues for future research.

2 Integration of Human Capital, Tax Flexibility, and Predictive Analytics into Enterprise Performance Indicators

In order to ensure sustainable competitiveness, enterprises must monitor and manage a wide range of performance factors that extend beyond financial indicators. In particular, human capital, the flexibility of tax strategy, and predictive analytics capabilities are becoming key success factors for the modern enterprise. The integration of these elements into a performance management indicator system constitutes a strategic innovation, aligning performance monitoring with the realities of a knowledge-driven, digitally transformed, and globally complex competitive environment. The following discussion will examine each of these dimensions and suggest how to incorporate them into a unified monitoring and evaluation system.

Assessing Human Capital as a Performance Dimension. The skills, engagement and creativity of employees, as components of an organisation's human capital, are increasingly recognised as sources of competitive advantage in the 21st century. In accordance with contemporary accounting standards, human capital is designated a "key intangible asset". This denotes that investments in the development of the workforce, in knowledge, and in the well-being of employees have the capacity to engender significant additional value, which is not reflected in the balance sheet. Conventional performance metrics frequently proved inadequate in accounting for such intangibles; however, in the contemporary context, this is no longer a tenable position. A 2023 analysis by S&P Global revealed that companies implementing more proactive human capital management strategies exhibited a higher proportion of revenue derived from innovation in comparison to their industry peers. This finding suggests that effective talent management practices confer a competitive advantage upon these firms. Enterprises that succeed in developing their human capital see tangible business benefits in terms of new products, services, and market growth (van der Lugt C., Podshadley E., Zimmermann L., & MacFarland M., 2023).

Therefore, moving beyond basic HR metrics such as headcount or payroll expenses, and incorporating strategic human capital indicators such as the employee engagement index, the rate of turnover of high-performing talent, the number of training and upskilling hours per employee, and the return on investment of human capital, contributes to better customer satisfaction and productivity. These indicators act as early warnings or confirmations of competitiveness. Research shows that companies that focus on

their employees' productivity and well-being significantly outperform their peers. According to McKinsey, organisations that prioritise workforce performance and development are 4.2 times more likely to outperform competitors, achieving ~30% higher revenue growth, lower attrition, better organisational culture, and innovation outcomes. This underscores the notion that the monitoring of human capital indicators is not a mere "nice-to-have" – it directly correlates with financial success and competitiveness (Noguera Lasa A., Pedroni A., Komm A., & Lavallée S. G., 2024).

In practice, the integration of human capital into a performance dashboard may involve the adoption of frameworks such as a human capital scorecard or the alignment with new standards (van der Lugt C., Podshadley E., Zimmermann L., & MacFarland M., 2023). It is proposed that enterprises consider incorporating a composite human capital index within their monitoring systems. This index would be calculated from sub-indicators, including but not limited to: employee engagement survey results, skill acquisition metrics, and internal promotion rates. Tracking this index over time and benchmarking it allows management to evaluate performance. Additionally, qualitative metrics, such as organisational health or corporate culture assessments, can form part of the monitoring process as these often precede quantitative outcomes. Crucially, human capital assessments must be monitored with the same rigour as financial indicators, providing decision-makers with actionable insights. For instance, if data reveals an increase in staff turnover in a critical department, management can investigate and intervene early by adjusting incentives and implementing career development programmes, before competitiveness is impaired.

Tax Flexibility and Financial Agility in Performance Indicators. Changes in tax legislation, such as new global standards (e.g., OECD BEPS 2.0) or sudden shifts in domestic policy, can have a significant impact on a company’s net income, cash flow and competitive position. Tax flexibility is an enterprise's ability to adapt its operations, financial planning, and tax position in a lawful manner to gain competitive advantages. In a VUCA world, where regulatory environments may change unpredictably, ensuring tax agility is especially important. A 2023 EY survey of private companies found that 76% of respondents expressed feelings of being overwhelmed by the "sheer volume, pace, and complexity of global tax reforms" affecting them. Furthermore, 29% of respondents cited the inability to identify, assess, and respond to legislative and regulatory changes as one of the most significant obstacles to achieving tax and finance goals. This finding lends further credence to the notion that a corporation's tax adaptability can exert a substantial influence on its financial performance and risk profile (Shultz, S., Helmer, D., 2023).

Traditional performance measurement systems did not consider tax strategy beyond the effective tax rate or compliance status. However, if managed strategically, the tax function can be a source of competitive advantage. In an EY study, one-third of private company executives said that "value creation and competitive advantage" was their tax department's top priority in enterprise development, ahead of compliance or risk management. Furthermore, 81% of these companies agreed that their boards viewed the tax function as a strategic business partner (Shultz S., Helmer D., 2023).

Consequently, enterprises are commencing the measurement and incentivisation of tax functions not solely on the minimisation of tax expenses, but also on the extent to which they facilitate business objectives. Such objectives may include the leveraging of tax incentives for innovation, the optimisation of global tax structures to liberate investment capital, or the rapid adaptation to regulatory changes to circumvent penalties and supply chain disruptions.

The integration of tax flexibility indicators into performance monitoring may necessitate the tracking of metrics such as the effective tax rate in comparison to that of competitors, the responsiveness to tax law changes, and the value of secured tax credits/incentives (e.g., for R&D, sustainability investments). Another useful metric is a tax risk index, which is a tool used to assess potential tax-related risks (e.g., audits, penalties, reputational harm) and how well they are managed. It is possible for an enterprise to target a reduction in its effective tax rate by a set percentage through the implementation of lawful efficiency measures. Concurrently, the enterprise may also wish to improve its "tax agility score", which is a qualitative assessment of preparedness for future tax changes. The monitoring of such indicators provides top management with visibility into a domain that exerts a direct influence on the bottom line, thus enabling targeted resource allocation (e.g., investment in tax technology or external expertise when agility scores are low).

A concrete example of the rising strategic role of the tax function is the trend towards tax digitisation and analytics. Leading firms are investing in tax data platforms and analytics to ensure compliance and extract insights, such as identifying which business lines or regions have the highest tax burden versus investment incentives. This phenomenon

can be reflected in performance metrics such as the "tax reporting and analytics cycle time", which may serve as an indicator of the agility of the tax function. The acceleration of the cycle is indicative of enhanced processes and systems, thereby enabling the company to execute strategic responses to tax changes with greater expediency.

The integration of tax-related indicators within an enterprise monitoring system acknowledges the non-random nature of tax outcomes, emphasising the capacity for management and optimisation. Enterprises that meticulously track and manage tax efficiency can gain a competitive advantage, including higher after-tax profits for reinvestment, the ability to avoid unexpected financial setbacks that may disconcert investors or stakeholders, and the capacity to structure operations in a tax-efficient manner that competitors may overlook. Consequently, tax flexibility metrics complement financial indicators, providing a clearer overview of net value creation and resilience. A competitive enterprise today can say: "We have effectively navigated the shifting tax landscape, enabling us to retain more value and avoid disruption."

Predictive Analytics and Proactive Indicator Systems. Predictive analytics transforms the performance monitoring system, turning it from a rear-view mirror into a comprehensive radar. It does this by employing statistical algorithms, machine learning and AI to analyse historical and real-time data, and forecast future events or trends. By incorporating predictive indicators into the monitoring system, management can transition from reactive control to proactive governance.

The incorporation of predictive analytics is congruent with the prevailing digital transformation of management practices. A plethora of organisations are inundated with data from internal systems (ERP, CRM, BI) and external sources (market trends, social media, economic indicators). Legacy KPIs are increasingly perceived as inadequate because they "fail to provide the information and knowledge leaders need to succeed" in a rapidly changing environment (Schrage M., Kiron D., Candelon F., Khodabandeh S., & Chu M., 2024). They often track what has already happened rather than guiding future action. It is crucial to recognise the need to invest in algorithmic innovation in order to make performance indicators smarter and more effective (Schrage M., Kiron D., Candelon, F., Khodabandeh S. & Chu M., 2024). These "intelligent KPIs" incorporate forecasting elements—for example, rather than simply measuring customer churn in the previous quarter, an AI-based KPI can predict churn for the next quarter and identify the factors that contribute to it.

The integration of predictive analytics into management indicators can take various forms. For example, it is possible to forecast next period's sales based on current plans and market conditions alongside current sales revenue. Similarly, a machine downtime predictor can use sensor data to forecast the likelihood of equipment failure over the next month, effectively serving as an early warning system for maintenance and production continuity. These predictive KPIs alert management to potential issues or opportunities in advance, enabling pre-emptive action.

Scenario analysis and simulation are becoming standard practices, driven by metrics. For instance, an enterprise may customarily undertake "what-if" simulations, encompassing scenarios such as a 10% escalation in raw material costs or the emergence of a new competitor in the market. These simulations facilitate the generation of forecasted financial and operational KPIs under the stipulated conditions. The statistics from such simulations can be tracked by maintaining a "strategic risk dashboard" that displays the outcomes of key scenarios, such as forecasted cash flow under stress conditions or capacity utilisation under a surge in demand.

Predictive analytics have the capacity to enhance risk management by generating Key Risk Indicators (KRIs) that predict potential threshold breaches. For instance, a predictive compliance indicator could estimate the likelihood of a security incident or regulatory non-compliance event in the following quarter based on current process metrics. In the event that the probability attains a specified threshold, management is duly notified to initiate an investigation or adopt preventive measures. Anomaly detection algorithms can also be implemented to monitor performance data, identifying unusual patterns (e.g., a sudden productivity drop at one plant that deviates from seasonal norms), which may indicate larger problems. The integration of such capabilities into a performance monitoring program enables a company to identify issues that may not be detected by traditional auditing processes.

The value of incorporating predictive analytics into performance management is confirmed by market trends and examples. The enterprise performance management (EPM) software market is evolving to include advanced analytics as a core feature. A Grand View Research report observes that the increasing volume and complexity of data are driving demand for analytics in EPM, as companies seek to improve forecasting accuracy and identify optimisation opportunities. The report emphasises that a comprehensive EPM approach, which now commonly integrates

planning, forecasting, and analytics, provides a holistic view of organisational performance. In essence, predictive analytics broadens the scope of this view to encompass future timelines and data horizons, thereby enhancing the strategic value of the monitoring system. To illustrate this point, consider the manner in which companies operating within heavily regulated industries employ EPM analytics. These sophisticated analytical tools are utilised to ensure compliance with regulatory frameworks and to avoid penalties by anticipating potential breaches of regulatory thresholds, should current trends persist (Grand View Research, 2023).

Another viewpoint comes from experts such as Gary Cokins, who emphasise that the purpose of analytics is not merely retrospective, but rather to "gain insights and foresight in order to make better and faster decisions based on accurate data, and to take action". Leveraging both internal and external data can give organisations a competitive edge. Should a company elect to apply predictive models to customer data and economic indicators, it may be possible for it to anticipate a shift in demand at an earlier point in time than its competitors, and to adjust its inventory or marketing strategy accordingly. This foresight can be measured in terms of the accuracy of a demand forecast KPI, and it can thereby become a source of strategic advantage. Indeed, the conversion of data into foresight constitutes a method of reducing the "ambiguity" component of VUCA. In circumstances where the future is uncertain, the implementation of probabilistic forecasts and early warnings can substantially enhance organisational agility.

The innovative nature of the proposed approach is evident in its synthesis of human capital, tax flexibility, and predictive analytics indicators into a unified monitoring and evaluation system. This integrated system acknowledges the interaction between these elements. For instance, the utilisation of predictive analytics in conjunction with human capital indicators has been demonstrated to be a fruitful endeavour. The implementation of advanced analytics has been shown to reveal the potential for a shortage of skilled labour, as evidenced by attrition or retirement projections, which may impede the attainment of production goals within a six-month timeframe. Such insights can only emerge if the system is capable of tracking workforce age distribution and engagement levels, and if it can apply predictive modelling. Consequently, management is able to proactively expand hiring or training programmes, thereby addressing strategy (ensuring capacity), human resources (talent management) and finance (budget for hiring) concurrently.

In a similar manner, the integration of tax flexibility with predictive analytics could entail the continuous scanning of proposed legislation and the modelling of its potential impact on a company's tax accounts – essentially, a predictive indicator of regulatory exposure. Consequently, businesses are able to plan strategic manoeuvres, including capital investments and market entry, whilst accounting for anticipated tax outcomes. This enables timely actions to maximise benefits or avoid potential pitfalls.

Consequently, in an integrated dashboard or a future-oriented balanced scorecard, one might observe traditional financial KPIs (revenue, profit margin, ROI) alongside human capital KPIs (engagement score, key talent turnover), tax and compliance KPIs (effective tax rate, compliance risk index), and predictive KPIs (forecasted next quarter sales, risk-adjusted cash flow projection).

Accordingly, this approach's scientific novelty lies in its blurring of the boundaries between management domains, reflecting a systems thinking perspective. It views the enterprise as a living system in which finance, personnel, operations and the external environment are all interdependent. Monitoring each element in isolation misses crucial dynamics; monitoring them together and forecasting their interactions provides a comprehensive view of organisational performance and competitiveness. This enables an enterprise not only to execute its current strategy but to continuously adapt it based on real-time feedback and foresight. Consequently, the performance monitoring system evolves into a strategic asset in its own right.

The results of the study are summarised in Table 1.

Consequently, utilising these indicators enables the company to comprehensively assess the events that have transpired, the underlying causes, and the potential future outcomes.

The present study will offer a practical application of this integrated monitoring and evaluation methodology by using the example of a hypothetical Company X, with a view to demonstrating how the various elements come together during the decision-making process.

3 Practical Model: Monitoring and Evaluation System in Practice (Company X)

The following discussion will consider the hypothetical medium-sized manufacturing company, Company X, which operates in a globally competitive market and specialises in the production of food products. The company has approximately 500 employees and operates in two countries. In recent years, the company

Table 1 Integrated management indicators and their relationship with competitiveness

Management indicators	Example of integrated indicators	Impact on competitiveness
Human Capital	– Employee engagement index. – High-performer retention rate. – Training investment per employee. – Human Capital ROI.	Drives innovation and service quality (through skilled and motivated staff), reduces turnover costs; creates opportunities for future growth.
Tax Flexibility	– Effective tax rate vs. peer average. – Response time to new tax law compliance. – Value of tax incentives captured. – Tax risk/compliance index.	Improves net profitability, increases funds for reinvestment; avoids disruptions and penalties; allows for flexible strategic moves with minimal tax difficulties.
Predictive Analytics	– Forecast accuracy of key indicators (sales, demand, etc.). – Scenario stress testing results (e.g., forecasted cash flow under an adverse scenario). – Early warning indicators (e.g., forecasted equipment failure rate). – Data quality index for analytics.	Increases preparedness and agility (advance action on predictions); optimises resource allocation (based on forward view); reduces surprises by catching issues early.

Source: developed by the authors on the basis of (Shultz S., Helmer D., 2023; Schrage M., Kiron D., Candelon F., Khodabandeh S., & Chu M., 2024; Noguera Lasa A., Pedroni A., Komm A., & Lavallee S. G., 2024)

has confronted a series of VUCA challenges, namely the rapid advancements in technology that have impacted its products, the uncertainty surrounding supply chain costs, the intricacies of managing operations in multiple countries, and the ambiguity of consumer trends within its niche market. Historically, Company X's performance management relied on a traditional system focused on quarterly financial results, production efficiency indicators and basic personnel statistics. However, this system suddenly became uncompetitive when the company was hit by a series of setbacks: a jump in raw material prices and a simultaneous exodus of skilled workers, who left to join more technologically advanced companies, led to underachievement of production targets and delays to product launches. These events highlighted the need for a more comprehensive and forward-looking approach to monitoring.

Company X elected to undertake a review of its monitoring and evaluation system, utilising the methodology outlined in the present study as a framework. The identification of key performance indicators (KPIs) in three novel domains, in addition to traditional financial KPIs, was a key finding.

Company X initiated a quarterly survey on employee engagement, incorporating pulse indicators to assess levels of skilled turnover. The company has successfully identified and recruited a number of key personnel, including R&D engineers and project managers. In addition, a "Learning and Growth" metric was incorporated, which measured the average number of hours of training per employee per year, with a particular emphasis on upskilling in new technologies.

The finance department implemented tax flexibility metrics which began reporting the difference between Company X's effective tax rate (ETR) and the industry average ETR, a measure of tax efficiency. A tax response log was introduced to identify any available tax incentives, such as those relating to green energy investments, employee training, and KPIs were set to utilise the relevant incentives (with the aim of achieving 100% utilisation of any tax credit opportunity).

The company, X, made an investment in a team specialising in data analytics, in addition to the procurement of the relevant tools. The implementation of a "Rolling Sales Forecast Model" was undertaken, with the model undergoing monthly updates to provide a 6-month forecast. The accuracy of these forecasts (actual vs. forecast) is now monitored. Furthermore, a Risk Radar score was developed, a composite score derived from scenario analysis. This entailed the modelling of worst-case scenarios concerning supply chain disruption, sudden demand drops, and regulatory changes. The impact of each scenario on EBITDA was assessed, and the scenario with the highest impact (compared to the baseline) was reported as the Risk Radar score (higher means more vulnerability). A machine sensor system has been installed on the production line to generate a predictive maintenance KPI: the probability that a machine will be out of service within the next month. If this probability exceeds

a certain threshold, the machine is marked red. All these new metrics, alongside the traditional ones, were incorporated into the central Company X performance dashboard, which was reviewed at monthly management meetings. Crucially, accountability was linked to the metrics: the HR director was responsible for improving engagement and reducing critical turnover (with set targets), the CFO and tax manager were responsible for the ETR gap and response time KPIs, and the COO and analytics manager were responsible for forecast accuracy and machine downtime prediction.

Table 2 shows the results of integrating human capital indicators, tax flexibility and predictive analytics into Company X's overall performance management assessment system.

A thorough examination of the data presented in Table 2 reveals that the observed increase in revenues can be attributed, at least in part, to the implementation of a novel monitoring system. The employee engagement indicator exhibited a marked increase of 20%, ascending from 65 to 78 individuals. This substantial rise is concomitant with a decline in talent turnover, which diminished from 18% to 10%. The enhanced retention of qualified personnel resulted in more stable project teams and accelerated product development cycles, thereby contributing to revenue growth and more timely deliveries (where an observed improvement was recorded from 90% to 95%).

From a tax perspective, the effective tax rate decreased to 25% in Year 2, aligning with the industry average, while previously the company was paying 3% more. This was achieved by taking advantage of the tax credit for energy-efficient equipment and reorganising the subsidiary into a more favourable jurisdiction after monitoring revealed an ETR gap. The tax response time indicator proved valuable when a new digital services tax rule was proposed. Company X formed a task force and adjusted its pricing model within two months to account for the potential tax. This was significantly faster than its competitors, who reportedly took more than six months.

The predictive analytics capabilities also demonstrated clear benefits. The sales forecast was accurate to within ±5%, which gave the operations team the confidence to ramp up production in Q3 of Year 2, when the model predicted a spike in demand. This led to maximised sales (whereas in Year 1, due to conservative planning, a similar spike was missed, resulting in overstocking). This development contributed to enhanced revenue growth. The implementation of machine downtime alerts enabled maintenance teams to execute repairs and servicing operations at optimal times. This increased production capacity and reduced costs (reflected in improved margins) is a key finding of this study. Furthermore, the "Risk Radar" scenario analysis provided the executive team with foresight. For instance, one scenario in Year 2 highlighted a raw material supply risk due to a geopolitical event. In response, Company X proactively diversified its suppliers. In Year 1, the absence of such analysis resulted in a similar risk materialising as trade tariffs, which caught the company unawares and had a detrimental effect on costs.

Consequently, Company X's management culture shifted from being reactive to being proactive. Department heads began to collaborate

Table 2 Hypothetical performance of Company X before and after integrating human capital, tax, and predictive indicators

Performance Indicator	Year 1 (Pre-integration)	Year 2 (Post-integration)
Revenue growth rate	2.5% (slow)	5.8% (improved)
Operating profit margin	10%	12%
Employee engagement score (out of 100)	65	78
Turnover rate of key talent (annual)	18%	10%
Effective tax rate (ETR)	28%	25%
ETR gap vs. industry average	+3 percentage points	0 percentage points (on par)
Avg. response time to tax changes	(no formal tracking) ~6 months	2 months
Sales forecast accuracy (6-month horizon)	Not measured (qualitative guesses)	±5% deviation on average
On-time delivery rate	90%	95%
Machine downtime (hrs/month)	50 hours	30 hours
Predictive downtime alert (flagged instances)	N/A (reactive maintenance)	2 significant alerts, both addressed preemptively

Source: compiled by the authors

more, encouraged by the integrated dashboard to have cross-functional discussions. This enabled them to monitor and anticipate performance, as well as shape it.

Using a comprehensive set of indicators, the company improved its performance across multiple dimensions, including financial performance, operational efficiency, employee morale, tax effectiveness and risk management. These improvements were not driven by luck or a focus on a single factor, but by balanced attention to various competitive factors. A competitive advantage is not only achieved by cutting costs or increasing revenue in isolation, but also by strengthening the core systems that deliver these top-level outcomes: human talent, efficient processes (including tax and financial) and data-driven foresight.

4 Conclusions and Future Research Directions

Traditional management approaches and performance measurement models, which were effective in more stable times, are no longer sufficient. Companies that cling to outdated, isolated performance indicators risk being overwhelmed by rapid changes. In contrast, those that employ integrated, forward-looking monitoring systems are better placed to navigate chaos and transform it into a competitive advantage.

This study's scientific novelty lies in its unification of domains that are often managed separately: human capital assessment, financial/tax flexibility indicators and predictive analytics. These are brought together into one coherent system. This integration reflects a systems-based approach to organisational effectiveness, recognising that financial performance is inextricably linked to human factors and external adaptability. The incorporation of personnel metrics, tax strategy, the implementation of a forecasting perspective, and scenario-based indicators has been identified as a key factor in the evolution of monitoring from a passive summary of outcomes into an active navigation practice, which has been termed "predictive management".

The findings of this research provide a clear message for practitioners and business leaders: in order to ensure competitiveness, the scope of monitoring activities must be broadened. Organisations should re-evaluate their current dashboards of key performance indicators and ask whether critical assets such as human capital, dynamic capabilities, and change readiness are being adequately tracked. If not, these blind spots must be filled with carefully chosen indicators. Another practical conclusion is the importance of scenario planning and modelling as part of the monitoring process. During periods of volatility, establishing a regular schedule of monthly or quarterly scenario reviews using predictive models can greatly improve an organisation's strategic preparedness.

It is important to acknowledge that the proposed framework is extensive and may necessitate customisation for particular contexts. However, it should be noted that different industries may assign different weights to these three factors. To illustrate this point, consider the contrasting priorities of a technology startup, which may place significant emphasis on human capital and predictive analytics, and a multinational manufacturing firm, which is compelled to accord equal attention to tax indicators due to their substantial impact on net profit. The hypothetical applied case in this study simplifies many aspects; however, in reality, organisations will face more complex trade-offs and implementation challenges. Nevertheless, it is imperative that managers receive training to interpret new indicators and act accordingly, thereby ensuring that KPI expansion does not result in a dilution of strategic focus. Consequently, a phased approach may be advisable, entailing the integration of one dimension at a time or the piloting of the framework in a single department, with learning occurring through this process, and subsequent scaling up.

Future research directions may include the gathering of data from companies that have implemented aspects of this framework, with a view to quantitatively assessing their performance compared to others. Another promising avenue for exploration is the potential of emerging technologies, such as artificial intelligence and blockchain, in the enhancement of performance monitoring. For instance, AI could be used not only for forecasting but also for prescribing actions, thus extending from predictive to prescriptive analytics.

This study corroborates the assertion that monitoring and evaluation systems are not merely operational tools, but also strategic instruments. In order to ensure competitiveness in a turbulent world, it is vital that firms are able to anticipate future developments and manage the full spectrum of factors that contribute to success. A comprehensive management approach enables enterprises to align their resources more effectively with their strategy, anticipate change, and maintain the flexibility to thrive. The findings of this research establish a foundation upon which both businesses and academics can build, moving closer to performance management practices that provide not only competitive advantage but also long-term resilience and sustainability in the face of any future.

References

Trueblood, G. (2022). Turning VUCA into a competitive advantage. Available at: https://insigniam.com/navigating-leadership-in-a-vuca-world/#

Aimar, C., & Smith, D. K. (2022). VUCA: A management tool for dealing with challenges in changing environments. Global Journal of Entrepreneurship, 6(1), 37-48 Available at: https://www.igbr.org/wp-content/Journals/Articles/GJE_Vol_6_No_1_2022%20pp%2037-48.pdf#

Fross, T. (2022). Get Your Organization VUCA-Ready in 2022. Prophet Ideas in Action Blog. Available at: https://prophet.com/2022/02/get-your-organization-vuca-ready-in-2022/#

Oracle Fusion Cloud Enterprise Performance Management. (2025). Official website. Available at: https://www.oracle.com/performance-management/#

Schrage, M., Kiron, D., Candelon, F., Khodabandeh, S., & Chu, M. (2024). The future of strategic measurement: Enhancing KPIs with AI. MIT Sloan Management Review. Available at: https://sloanreview.mit.edu/projects/the-future-of-strategic-measurement-enhancing-kpis-with-ai/#

Van der Lugt, C., Podshadley, E., Zimmermann, L., & MacFarland, M. (2023). How good human capital management creates competitive advantage. S&P Global Sustainable1 Insights. Available at: https://www.spglobal.com/esg/insights/featured/special-editorial/how-good-human-capital-management-creates-competitive-advantage#

Noguera Lasa, A., Pedroni, A., Komm, A., & Lavallee, S. G. (2024). In the spotlight: Performance management that puts people first. McKinsey & Company. Available at: https://www.mckinsey.com/capabilities/people-and-organizational-performance/our-insights/in-the-spotlight-performance-management-that-puts-people-first

Shultz, S., Helmer, D. (2023). Why competitive private businesses are transforming their tax function. Ernst & Young. Available at: https://www.ey.com/en_us/insights/tax/why-competitive-private-businesses-are-transforming-their-tax-function#

Grand View Research. (2023). Enterprise Performance Management Market Size, Share & Trends Analysis Report, 2024–2030. Available at: https://www.grandviewresearch.com/industry-analysis/enterprise-performance-management-market-report#

Received on: 05th of August, 2025
Accepted on: 27th of September, 2025
Published on: 30th of December, 2025