

DATA-DRIVEN ORGANIZATIONAL CHANGE MANAGEMENT: INNOVATION, LEADERSHIP, COMMUNICATION, AND TEAMWORK

Oliver MOMČILOVIĆ^{1*}, Dragan DOLJANICA², Mouhamed Bayane BOURAIMA³,
Suzana DOLJANICA⁴

¹Faculty of Applied Management, Economics and Finance, Belgrade, University Business Academy in
Novi Sad, Serbia, oliver.momcilovic@mef.edu.rs
<https://orcid.org/0000-0002-2926-3475>

²Faculty of Applied Management, Economics and Finance, Belgrade, University Business Academy in
Novi Sad, Serbia, dragan.doljanica@mef.edu.rs
<https://orcid.org/0000-0001-5348-879X>

³International School of Technical Education, Sichuan University of Architectural Technology, Deyang,
Sichuan, China, 2576255774@qq.com
<https://orcid.org/0000-0002-5801-884X>

⁴Faculty of Applied Management, Economics and Finance, Belgrade, University Business Academy in
Novi Sad, Serbia, suzana.doljanica@mef.edu.rs
<https://orcid.org/0000-0001-7403-0585>

Abstract: This paper examines the determinants of organizational change within the contemporary business environment, with a particular focus on innovation, leadership, business communication, and teamwork. The objective is to theoretically conceptualize and empirically determine the key factors that drive the dynamics and success of corporate transformational processes. The theoretical findings indicate that innovation serves as the primary vehicle for competitive advantage, leadership acts as the critical catalyst for change, business communication constitutes the foundational platform for information exchange, and teamwork facilitates the collective execution of strategic goals. The empirical results confirm the high predictive power of the model ($R^2=0.982$), with the level of innovation exerting the most substantial impact ($\beta=0.416$), followed by leadership ($\beta=0.217$), business communication ($\beta=0.206$), and teamwork ($\beta=0.152$). The study concludes that organizational change emerges from a synergistic relationship among the analyzed determinants, with innovative processes playing a dominant role.

Keywords: Organizational change, innovation, leadership, business communication, teamwork, management.

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* Corresponding author

1. Introduction

In the modern knowledge economy, the business environment is characterized by an unprecedented dynamic of shifts, high volatility, and intense global competition. Under such conditions, the survival and developmental trajectory of corporate systems are no longer guaranteed by conventional static business models; rather, they are directly contingent upon the organizational capacity for continuous adaptation and transformation. Driven by rapid technological progress and the imperative for digitalization, contemporary organizations must evolve from rigid, bureaucratic entities into flexible, data-driven systems capable of converting environmental flows into strategic advantages. Consequently, the management of organizational change has shifted from a periodic administrative necessity to a central, continuous function of strategic management, consider Maistrenko and Rozhko (2025).

Although contemporary literature widely recognizes the significance of organizational transformations, their execution remains a highly complex and risky endeavor, frequently hindered by internal inertia, structural bottlenecks, and employee resistance. According to Roy and Manimekalai (2025) managing these processes requires a holistic understanding of internal organizational dynamics, making it insufficient to treat change merely as a technical or structural adjustment. Instead, corporate transformation must be observed as a multidimensional phenomenon shaped by a network of interconnected factors. Synthesizing previous scientific contributions and corporate practices, this paper identifies and examines four fundamental pillars that dictate the velocity, intensity, and ultimate success of transformational processes: innovation, leadership, business communication, and teamwork.

The rationale for selecting these specific determinants lies in their functional and complementary roles within the change management cycle. According to Padilla et al. (2026) innovation serves as the primary engine and substantive core of change, defining what needs to be transformed to secure a competitive edge. Leadership acts as the crucial catalyst and guide, articulating the vision and driving the energy required to initiate reforms. Business communication establishes the structural infrastructure for info-flow, ensuring transparency, minimizing uncertainty, and aligning individual perceptions with corporate objectives. Finally, teamwork operationalizes these strategic goals on the ground, enabling the pooling of complementary skills and fostering a collective commitment to new operational modalities.

Despite their evident theoretical interconnectedness, there remains a notable deficit in empirical frameworks that quantify the precise predictive weight of these factors in a unified, data-driven model. This paper addresses that gap by merging theoretical synthesis with a robust quantitative analysis. The primary objective of this study is to theoretically conceptualize and empirically validate an integrated regression model that isolates the individual and joint impacts of innovation, leadership, communication, and teamwork on the dynamics of corporate change management. By utilizing advanced analytical tools, specifically linear regression within the Orange Data Mining software suite, this study provides actionable, data-driven insights into how modern managers can optimize their resource allocation to successfully navigate organizational transformations.

2. Innovation as a determinant of organizational change

In contemporary economic literature, diverse theoretical approaches exist regarding the definition of innovation. Many researchers view this process as a primary pillar of market survival, explicitly stating that innovations are the most significant vehicle for competitive advantage (Bogetoft et al., 2024). According to the assessment presented by Čičovački et al. (2022), the main purpose of innovation through entrepreneurship is reflected in improving people's lives. A systematization of prior literature reveals that while some authors emphasize

the very essence of change, others classify its specific forms; thus, within academic discourse, innovation is operationalized through several key definitions. Innovation is the application of new knowledge to offer a new product or service demanded by customers. Innovation is invention coupled with commercialization. The specific tool of entrepreneurs, the means by which they exploit change as an opportunity for a different business or a different service. Concurrently, Dess et al. (2007) highlight the transformational power of knowledge, explaining that innovation involves using new knowledge to transform organizational processes or to create commercially viable products and services, supplementing this with the view that it constitutes an internal structural improvement namely, the process of applying a new idea to improve organizational processes, products, or services.

Through the implementation of technological innovations, organizations transform their market offerings and optimize internal mechanisms considers Chandiona (2026). Technological innovations create new product or service assortments, increase efficiency, and optimize costs. In this regard, it is essential to establish a clear distinction between the concepts of invention and innovation. Invention it is the act of creation or production using imagination, whereas innovation is the commercial exploitation of that invention. Consequently, a firm can be successfully positioned as innovative even if it does not directly generate inventions, given that innovation involves adopting ideas that are new to the adopting organization. Successful entrepreneurs do not perceive external shifts as threats; rather, they recognize them as avenues for achieving strategic advantages and pioneering new business opportunities. The core element of any innovative activity is the introduction of novelty into operations, because, as Dess et al. (2007) emphasize, novelty is the critical point of any innovation, whether it relates to products or services. From an economic perspective innovation is an action that endows resources with a new capacity to create wealth, adding that resources themselves lack utility until someone finds a use for something in nature and thus endows it with economic value.

According to Wronka-Pośpiech et al. (2026) theoretical analyses of entrepreneurship frequently employ a detailed categorization of innovative forms". There are different types of innovation, such as incremental innovations, radical innovations, changes in the technological system, or changes in the techno-economic paradigm. Incremental innovations are characterized by continuity and permanence; although they yield only partial improvements, they accumulate substantial long-term effects on productivity growth and quality. Through incremental strategies, organizations successfully buffer external shocks by utilizing continuous yet gradual innovation, enterprises can effectively and efficiently cope with emerging difficulties, which can frequently be unpredictable in these times. Conversely, radical innovations are the direct output of organized research and development (R&D) activities; they proliferate across various economic sectors and trigger profound structural transformations. Changes in technological systems have far-reaching effects that impact multiple industries simultaneously, while shifts in the techno-economic paradigm transform entire economic systems and redefine business models across all sectors of the economy. In terms of scope, innovations are differentiated into product or service innovations (which target higher revenues but carry commercial risks) and process innovations (aimed at cost reduction but carrying technological risks). Furthermore, innovative capacities can be significantly strengthened by moving away from closed models; in this context, Lazarević-Moravčević et al. (2022) note that a firm's ability to create and introduce innovations can be substantially enhanced if an open innovation model is adopted namely, through intensive collaboration with other enterprises, and particularly with research and development institutions.

Human creativity forms the bedrock of any innovative process. According to Laud et al. (2023) innovation stems from creativity, where creativity refers to the definition of new user-oriented ideas. It is therefore necessary to simultaneously foster creativity (the generation of

ideas) and innovativeness (their materialization into tangible benefits). A firm's competitive positioning is directly contingent upon employee creativity, and Certo and Certo (2009) point out that creativity is a key element for managers in achieving corporate goals. According to these authors, individual employee creativity is structured around three core components: expertise which encompasses everything an individual personally knows and can perform within the broader scope of their job in the company; creative thinking skills the ability to combine old concepts or ideas in a novel way; and motivation which refers to the employee's personal passion or need to be creative, because if an individual does not feel the need to be creative, they likely will not be (Certo & Certo, 2009). Management is responsible for encouraging this creative expression state that within an enterprise, there should be a creative energy flowing among employees, supported by an integrated information system for exchanging reliable data on changes that are vital for goal achievement.

Creativity is stimulated by establishing an appropriate work environment which, according to the analysis by Lee and Sosa (2025), must incorporate the following components: challenging work, defined as work that requires effort, attention, and focus, and is perceived as important to others in the organization; organizational support, which must be directed toward creativity, new ideas, reward systems, recognition, and the encouragement of creativity across all departments and organizational levels; supervisor support, fostered through open dialogue; work group support, where members cultivate solidarity; work autonomy, since employees are significantly more innovative when granted decision-making freedom; and the elimination of barriers, which implies the organization's obligation to remove all factors that stifle creative expression.

In the contemporary context, technological progress opens new avenues, leading Philbin et al. (2022) to conclude that innovations driven by digital transformation have the capacity to enable sustainability, competitiveness, and the customization of products and services. Ultimately, a clear conclusion can be drawn that the attained level of innovative capacity within an enterprise serves as a critical determinant that dictates the intensity, dynamics, and overall success of contemporary organizational change.

3. Leadership as a generator and catalyst of organizational change

In contemporary organizational sciences theory, a change is defined as an observable deviation from a previously established state within a system considers Weick and Quinn (2026). In studying this social and economic phenomenon, Syed et al. (2021) note that change is life, not just its necessity. Dynamic transformations reshape the overall business environment of an enterprise and dictate the professional reality of employees across all hierarchical levels. The nature of these changes can be bipolar; positive modifications are aimed at capitalizing on new market opportunities, whereas negative ones are regressively tied to the past and to organizational issues that degrade the firm's position. In constantly shifting circumstances, current stability does not guarantee future viability, as past decisions can induce dysfunctional consequences for the system. Leader must continually and carefully re-evaluate changes to remain effective and successful within the enterprise. Theoretical research confirms that sustainability and strategic progress directly correlate with the personal profile of the managerial staff; thus, Piwovar-Sulej and Iqball (2022) conclude that the functioning and development of any enterprise depend on the characteristics of its leader. Beyond the experience required to evaluate external fluctuations, leaders must possess highly developed perceptive abilities and the skill to rapidly acquire knowledge. According to the assessment by Hossin et al. (2023), „utilizing an appropriate leadership style enables corporate management to move forward and succeed in achieving organizational goals.“

Organizational changes simultaneously unlock a wide spectrum of developmental alternatives and market possibilities. A firm's environment alters its strategy, but the firm also generates changes in response. A leader is perpetually faced with the choice of whether to modify, fully accept, or definitively reject an observed change (Westover, 2024). Modern research approaches suggest that change management transcends the individual traits of a single person. As Etzion et al. (2017) state, „diverse leadership practices reflect not only individual-level leader attributes, but function as firm-level practices embedded in structures, systems, and routines that serve as mechanisms for driving business change.“ Taking personal responsibility for strategic destiny represents a fundamental characteristic of modern leadership, which demands the abandonment of rigid, traditional forms of management. A paradigmatic shift in organizational architecture, has shifted from the manager to the leader, from function to action, making leadership the key to effective change management in enterprises.

A competent leader must not display resistance toward innovation; instead, they must cultivate an inclusive environment that is receptive to technologically advanced ideas. In the context of managing contemporary companies, Jabeen (2022) highlights the superiority of a specific managerial approach, concluding that the transformational leadership style is the most influential in terms of survival, performance, organizational learning, and innovation within enterprises. The selection and critical evaluation of ideas form an essential part of leadership responsibility considers Todd et al. (2022). Rejecting poor ideas creates opportunities for adopting sound ones, which should be anchored in the shared values of the employees and the vision of the leader, who ultimately bears the responsibility. Conversely, a deficit in managerial competencies directly undermines stability and threatens the economic position of the organization, as indicated by Bernabé-Castaño et al. (2022), who assert that ineffective leadership can lead to a loss of productivity and undermine the economic benefits of the enterprise.

Historical and empirical evidence demonstrates that implementing fundamental reforms and restructuring demands exceptional leadership capacity. All radical changes require excellent leadership. In this process, the leader's capability acts as the primary catalyst for overall organizational development. Drawing upon analytics and structured environmental data, the leader formulates long-term assessments, forecasts, and projections of future system states. To construct a clear blueprint for future development, management must permanently analyze all organizational changes, market opportunities, threats, and constraints. Furthermore, enhancing internal performance is contingent upon external networking capabilities. Corporate leaders should collaborate with other firms to adapt more easily to the external business environment, thereby strengthening their own performance as well as the capacity of their enterprise. To make sound decisions in high-risk situations, leaders and employees must integrate their entire repository of knowledge, professional skills, and intuitive judgments, which serves as a crucial tool for buffering pressures from a turbulent global environment. According to Malek and Almarri (2023) effective response to challenges requires fostering a proactive collective attitude toward change and the adoption of technological innovations. For managerial personnel, the velocity at which decisions are translated into concrete actions is of critical importance, while employees are expected to demonstrate full commitment and support for the defined mission and vision. Only when the market position is precisely identified can a leader successfully guide data-driven organizational changes (Tripathi, 2025).

Taking into account these theoretical concepts and the findings of empirical studies, an unequivocal conclusion can be drawn that the quality, style, and development of leadership potential constitute a pivotal independent variable that directly determines the success and speed of organizational change implementation.

4. Business communication as a determinant of organizational change

According to Capurro et al. (2023) in contemporary corporate governance, communication processes serve as the foundational platform for the structured exchange of business information and the transmission of messages, while ensuring an optimal level of mutual understanding. The essence of this phenomenon lies not exclusively in the literal content of the message, but primarily in the modality of its expression the specific manner in which information is articulated and interpreted. Relevant research in the field of organizational behavior suggests that communication accounts for as much as 95% of the processes involved in establishing interpersonal relationships and forming stable connections within business systems (Rudančić et al., 2026). The evolutionary development of human society is inextricably linked to the expansion of communication forms, encompassing both verbal expression and non-verbal interaction. Some forms of non-verbal communication include facial expressions, body language, appearance, intonation, vocal volume, and speech patterns. Certain animals, and even humans, can communicate silently through instinctual body language or gestures, all of which constitute distinct forms of communication. The mechanisms of information transmission undergo constant evolution. The quality and outcomes of modern verbal communication are influenced by various components, such as the communicator's level of education, depth of knowledge, character traits, interests, upbringing, logical reasoning capacity, personal worldview, and respect for the interlocutor.

Communication practices serve as an authentic mirror of the competencies of managers, leaders, and all employees within an enterprise. When communicating within enterprises, individuals should ask themselves why they are communicating and with whom, while learning how to be polite, patient, impactful, and tactful. All enterprises frequently confront various barriers to information transmission among employees; therefore, building and maintaining a functional and transparent communication system stands as a primary strategic task for management. An efficient flow of information acts as a direct driver of organizational changes that facilitate corporate growth and development. Theoretical literature highlights three fundamental reasons why optimizing business communication is an imperative: enhancing operational efficiency and employee creativity, elevating the quality of work life while fostering a stimulating environment, and strengthening sustainable competitive advantage in a volatile market. Adequately designed communication channels facilitate individual alignment with organizational goals, because, as Gerstner and Day (1997) and Yousaf et al. (2011) note, proper business communication allows employees to dedicate themselves to their work tasks more easily. An individual who possesses formal authority and is focused on goal realization must fully demonstrate their communication skills to generate positive economic effects. Anyone authorized and focused on a business task must demonstrate their power of business communication to achieve positive effects for the enterprise, whereby successful business communication among all employees does not replace, but rather supports knowledge within the organizational structure (Ranković, 2010).

Respecting and adequately valorizing the opinions of associates when making key decisions is a prerequisite for high participation rates within an organization (Haveman et al., 2023). Managerial staff play a pivotal role in modeling desirable communication patterns; if a climate of trust toward the leader is established within the collective, employees project a stable and prosperous vision of the enterprise's future. Conflicts in modern business represent an inevitable organizational reality; hence, business communication must become an integral component of leadership, coordination, mediation, and the continuous evaluation of all corporate functions. Fundamental task of managers and leaders is to provide continuous support to all employees across all hierarchical levels and to formulate specific business guidelines. Establishing understanding and trust between them is essential, as this encourages

all other employees to follow them. Conversely, the absence of clear communication flows directly degrades labor productivity, for as Barrett (2006) states, if there is no sound business communication within an enterprise, it can be argued that employee efficiency is virtually non-existent. On the other hand, an individual aspiring to professional advancement within the organizational structure needs to be an effective communicator who can make critical decisions. Employees spend the vast majority of their working hours communicating, accounting for approximately 75 to 95% of their time.

Business communication achieves maximum effectiveness and drives comprehensive organizational change only when it is horizontally and vertically disseminated across all hierarchical levels (Caniago, 2024). By permanently and actively utilizing internal communication, an enterprise develops a cohesive internal environment, which directly results in increased overall productivity. Hence, the continuous improvement of employee communication skills represents an essential resource for long-term corporate development. Communication within successful enterprises must not be encumbered by an autocratic approach or leadership arrogance. To ensure the proper decoding and understanding of feedback, management must develop active listening skills, because as Lyne de Ver (2009) highlights, in order to understand the messages of employees, managers and leaders must listen to them with particular attention and consult them continuously. Mutual trust between managerial and executive structures forms the bedrock of a stable organization. When employees at all levels communicate proactively and constructively, it directly reflects on the external image and market reputation of the enterprise. In this process, moral integrity and transparency emerge as critical imperatives, which is confirmed by Kouzes and Posner (2003) in their stance that honesty and morality among all employees in the enterprise are of paramount importance in business communication. Mutual respect and a readiness to hear divergent opinions elevate the level of internal employee motivation, while a greater number of integrated individual perspectives generates a higher diversity of creative solutions for ongoing business problems. Finely tuned business communication ensures the efficient transfer, selection, and storage of information at all levels of the enterprise. This information must be maximally simplified and clear to the end user, regardless of their educational profile, level of knowledge, or specific skill set. In the modern knowledge economy, the intensive application of information and communication technologies (ICT) offers powerful solutions that significantly accelerate, optimize, and facilitate the function and processes of business communication between management and employees.

By synthesizing the previously discussed frameworks and empirical evidence, a valid conclusion can be deduced that the attained level, quality, and transparency of business communication within an enterprise represent a critical variable that directly and deterministically influences the dynamics and overall success of contemporary organizational change.

5. Teamwork in the context of organizational change

In the contemporary corporate environment, work groups are positioned as a fundamental element of organizational reality (Zhao, 2022). Work groups represent a core characteristic of organizational life, as well as a vehicle for achieving objectives that can serve as a source of both profound satisfaction and dissatisfaction during social interactions among employees across all hierarchical levels. For managerial structures to adequately comprehend the internal dynamics of work groups, they must primarily examine the phenomena of human nature and individual behavior. Academic literature clearly underscores that the concepts of a „team“ and a „work group“ are not synonymous. Work groups can comprise varying numbers of members who

exert a constant mutual influence; however, to achieve shared goals, a collective consciousness focused on the community itself must be developed within the group. Not all work groups are teams, but all teams can be work groups. While the role of a manager is permanently pronounced in a work group, in teams, the managerial role is strong but may periodically shift. Regardless of these structural distinctions, Stojadinović-Jovanović et al. (2021) conclude that the team and teamwork constitute an indispensable component of organizational life and management. Viewed from a broader perspective, teamwork is defined as a modern approach to understanding diverse personality-related problems by engaging specialists from various professional profiles. The evolution of a formal supervisor into an authentic team leader represents a complex and protracted process. Establishing oneself as a manager or leader of a work team requires time and experience, noting that this cannot be achieved overnight; rather, it is a complex process based on trial and error, successes, and failures. Continuous learning and practice drive the transformation of a manager into a teamwork leader. If internal strengths and weaknesses are accurately identified. Various deficiencies can be compensated for, which represents another step toward understanding teams within enterprises. During social interactions, in addition to formally designated managers, informal leaders spontaneously emerge within groups, actively directing the orientation of the entire collective. According to Hossain (2025) modern management is tasked with sharing strategic objectives with employees at all hierarchical levels, transforming field-level information into developmental guidelines. The collective results of the leader and the team serve as the primary mirror of an enterprise's success (Vickers et al., 2025). To achieve continuous progress, management must thoroughly understand the personal qualities of its employees, clearly execute strategic business directions, and precisely plan future organizational changes. Boosting employee morale, adopting an empathetic approach, respecting personal integrity, and insisting on permanent education form the bedrock of effective leadership. In practice, resistance to collaborative work frequently arises among individuals due to the fear of assuming collective accountability in the event of failure a misconception that erroneously prioritizes individual labor over the success of a project that yields benefits for the entire group. Trust in the team and corporate teamwork is established through communication, respect, support, and competence. Mutual trust and respect empower team members, while the efficient functioning of the system demands clear communication, a thorough awareness of employee competencies, and an equitable reward model. Regarding the allocation of business tasks, all team members must prove themselves within the enterprise namely, they must be assigned the specific organizational roles that suit them best, while also demonstrating self-initiative and a clear desire to be part of a team. In any business environment, the emergence of conflicts is inevitable, and managers are obligated to resolve arising issues by relying on interpersonal skills.

6. Business change as a determinant of modern management

In the theory and practice of management science, the phenomenon of organizational transformation lies at the very core of scholarly debate. According by Khan (2025) changes permeate every aspect of modern human life and commerce; they are permanent, omnipresent, and unstoppable, serving as a fundamental prerequisite for survival. Analyzing the awareness of this phenomenon, Turner (2022) notes that the perception of business change and change management is linked to efficiency and responses to environmental threats, rather than to the disruption of business models or technology availability. The contemporary corporate environment is shaped by fluctuations that directly redefine the positions of owners, managers, leaders, and operational executives within enterprises. Market transformations within business systems possess their own dynamics, intensity, and pace of growth. The implementation of new

solutions often encounters internal barriers, given that employees in enterprises frequently resist business changes in an attempt to preserve well-established procedures and behavioral patterns.

In this context, the structured management of the transition process becomes a key managerial instrument. Change management is a process, as well as a tool and a technique for managing human transitions, aimed at enhancing business success, outcomes, and the understanding that operations within a social infrastructure such as an employee's workplace must constantly and efficiently evolve. Understanding the fundamental drivers of human behavior in these circumstances is critical to organizational success. The exact, true, and underlying cause of an employee's reaction to corporate business changes. When faced with uncertainty, individuals naturally project resistance. Who views changes negatively or feels threatened, because they deem them unnecessary should reframe their perspective entirely, thereby transforming a threat into a personal development opportunity. While constant turbulence from the external environment imposes high levels of stress, these fluctuations simultaneously serve as the central engine of development. In this regard, the key driver of an enterprise is 'change'; it is a core determinant of success.

Internal organizational transformations represent a direct reflection of and response to environmental fluctuations. Changes within enterprises are a response to changes in the business environment. Kotter (2012) underscores that „managerial accountability is indispensable and unquestionable for introducing business changes into enterprises. Managerial knowledge, skills, and abilities are of paramount importance for the advancement of enterprises through the use of contemporary methods and techniques for researching business functions. According to the assessment presented by Esser (2010), an enterprise can develop correctly and positively if all employees are integrated into all business processes and procedures. The integration of modern ICT imposes the necessity of lifelong learning. One of the most effective methodological frameworks for executing this process is the eight-stage change management model. The process must unfold successively through specific phases: the first stage establishing a sense of urgency; the second stage creating the guiding coalition; the third stage developing a vision and strategy; the fourth stage communicating the change vision; the fifth stage empowering broad-based action; the sixth stage generating short-term wins; the seventh stage consolidating gains and producing more change; and the eighth stage anchoring new approaches in the culture.

The strategic projection of an organization's future development is dictated by key analytical parameters outlined by Alakaş et al. (2025) „the changes that must be executed to secure the continuity of the competitive position, the opportunities that open up to the firm as a result of environmental shifts, and the threats and constraints that emerge for the enterprise from evaluated environmental changes.“ The primary obligation of modern management lies in rapidly elevating the internal capacities of employees to achieve competitive advantages by adapting to new circumstances. The professional competencies of managers form the backbone of any enterprise's operations; since changes naturally trigger operational problems. Internal resistance to change represents a natural component of the transformational cycle. The potential generated by the sources of resistance to business change in enterprises is highly significant, and managers must evaluate it thoroughly. Ultimately, (Mainardi, 2025; Gibbons, 2019) concludes that changes fundamentally involve business risks. Changes entail changing the minds of all employees. Consequently, a clear conclusion can be drawn that the level of readiness, analytical competencies, and methodological approach of management in handling business changes constitute a critical determinant that dictates the success of an enterprise's overall organizational transformation.

7. Empirical research

This section of the paper presents the empirical research findings obtained through linear regression analysis conducted within the Orange Data Mining software package (version 3.40.0). The objective of the analysis was to determine the extent to which the independent variables namely, the level of teamwork, the level of innovation, the level of business communication, and the level of leadership influence the defined target variable, the level of business changes, as well as to evaluate the predictive power of the established model (Figure 1).

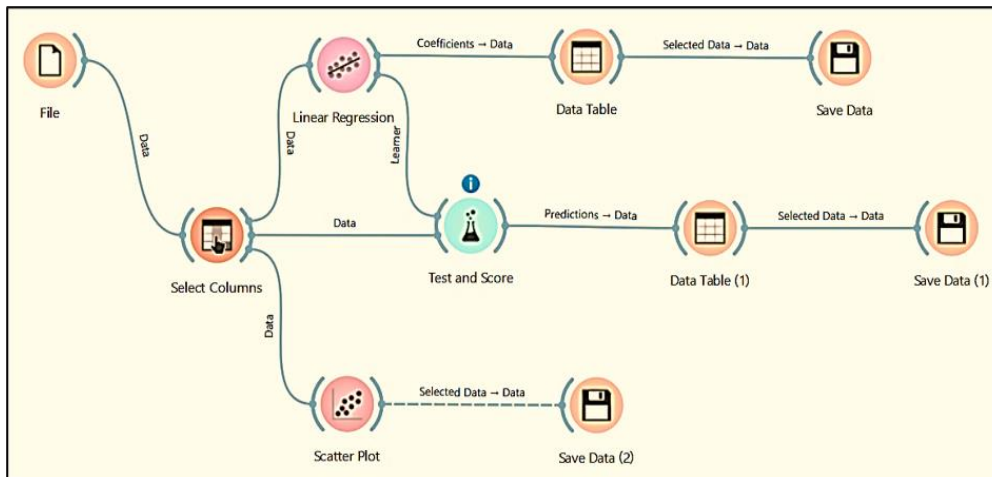


Figure 1. Research model

Source: Author's calculation

7.1. Evaluation and predictive capacity of the model

Prior to analyzing the coefficients themselves, an evaluation of the regression model's quality and reliability was conducted. Table 1 presents the key evaluation metrics: Mean Squared Error (MSE), Root Mean Squared Error (RMSE), Mean Absolute Error (MAE), and the coefficient of determination (R^2).

Table 1. Multiple linear regression model performance metrics

Model	MSE	RMSE	MAE	MAPE	sMAPE	R^2
Multiple linear regression	0.005	0.068	0.049	1.154	1.156	0.982

Source: Author's calculation

The coefficient of determination value of $R^2=0.982$ indicates that the established model explains as much as 98.2% of the variance in the target variable based on the analyzed predictors. This high value implies an exceptional model quality and a strong linear relationship. The error metrics confirm high predictive accuracy: the Mean Absolute Error (MAE) is a mere 0.049, while the low Root Mean Squared Error (RMSE) value of 0.069 indicates an absence of large prediction errors and extreme outliers. The Mean Absolute Percentage Error (MAPE) stands at 1.154%, meaning that the model predicts outcomes with an accuracy of nearly 99%.

7.2. Analysis of the influence of independent variables (regression coefficients)

To determine the individual contribution of each observed factor, the regression coefficients (β) were analyzed. All examined predictors exert a statistically positive influence on the target variable, the level of business changes. A detailed overview of the coefficients and their respective weights is provided in (Table 2).

Table 2. Multiple linear regression model performance metrics

Independent variable	Coefficient (β)	Direction of influence
Free term (Intercept)	0.019365	Positive
Level of innovation	0.415959	Positive (Strongest)
Leadership level	0.216742	Positive
Level of business communication	0.206041	Positive
Level of teamwork	0.151965	Positive

Source: Author's calculation

Based on the obtained data, the empirical model can be formalized using the following regression equation (Equation 1):

$$\begin{aligned} \text{Level of business changes} = & 0.0194 + 0.4160 \cdot \text{Level of innovation} + \\ & +0.2167 \cdot \text{Leadership level} + 0.2060 \cdot \text{Level of business communication} + \\ & +0.1520 \cdot \text{Level of teamwork} \end{aligned} \quad (1)$$

The analysis of the coefficients yields the following conclusions: The level of innovation ($\beta=0.415959$) represents by far the strongest predictor in the model. A one-unit increase in the level of innovation generates a 0.416 increase in the target variable, implying that innovative processes are the key driver of the observed phenomenon. The level of leadership ($\beta=0.216742$) and the level of business communication ($\beta=0.206041$) exert an almost uniform, moderately strong positive influence. Both components are statistically significant and contribute to the steady growth of the final outcome. The level of teamwork ($\beta=0.151965$) records the lowest coefficient value among the observed factors. Although its impact is undeniably positive, it plays a secondary role compared to innovation and leadership skills within this model. The scatter plot of actual versus predicted values (Figure 1) shows that the dense concentration of data points along the diagonal line of perfect prediction visually confirms the high coefficient of determination ($R^2=0.982$) and the exceptional accuracy of the linear regression model.

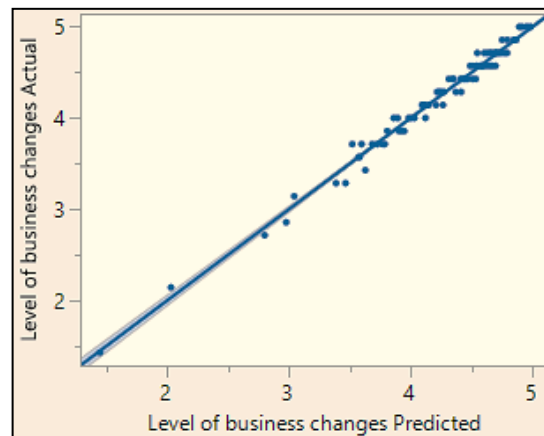


Figure 2. Diagram actual vs. predicted

Source: Author's calculation

8. Empirical results and discussion

The high predictive capacity of the model ($R^2=98.2\%$) demonstrates that the selected independent variables (teamwork, innovation, business communication, and leadership) were appropriately chosen and represent the fundamental pillars of the business change phenomenon. The dominance of the level of innovation as the most critical factor clearly suggests that the strategic focus must be directed toward modernization, creative solutions, and

business paradigm shifts, given that this factor yields twice the effect compared to the individual impacts of managerial and team structures. On the other hand, the relatively low coefficient for the level of teamwork indicates that team homogeneity, lacking clear leadership guidance and an innovative platform, cannot independently generate above-average results. The obtained results are in complete alignment with contemporary literature on business changes, where innovativeness is consistently identified as the primary differentiator and value generator in the modern business and social environment.

9. Conclusion

Based on a systematic analysis of the relevant scientific literature addressing the complexities of organizational change, a multidimensional conclusion can be drawn regarding the key determinants that shape the dynamics, intensity, and success of transformational processes in contemporary enterprises, namely:

- Innovation represents a fundamental vehicle for achieving and sustaining competitive advantage, with its essence reflected in the commercial application of new knowledge and the transformation of inventions into market-valued products, services, or processes. The distinction between incremental and radical innovations points to the existence of diverse strategic pathways that organizations can pursue, where the selection of the appropriate innovation model depends on specific capacities, resource constraints, and the dynamic characteristics of the environment in which the enterprise operates.
- Leadership is positioned as a critical generator and catalyst of organizational change, with the transformational leadership style demonstrating the highest efficacy in fostering innovation, organizational learning, and the long-term survival of the firm. The quality, style, and development of leadership potential serve as independent variables that directly dictate the success and velocity of organizational change implementation, whereas ineffective leadership simultaneously undermines productivity and the economic standing of the organization.
- Business communication constitutes the foundational platform for the structured exchange of information, where its level, quality, and transparency represent critical variables that deterministically influence the dynamics of transformational processes. Effective communication channels facilitate employee identification with organizational goals, mitigate resistance to change, and generate a cohesive internal environment that encourages participation and collective commitment.
- Teamwork asserts itself as an indispensable segment of organizational life, whereby the success of collective formations depends on the integrated interplay of communication skills, mutual respect, complementary competencies, and defined decision-making procedures. Team cohesion and a well-developed collective identity directly enhance organizational efficiency during the change implementation process.

Organizational change represents a permanent and unstoppable determinant of contemporary management, wherein the level of readiness, analytical competencies, and methodological approaches to change management dictate the success of the overall organizational transformation. The systematic application of structured change management models, such as Kotter's eight-stage framework, proves to be an efficient instrument for overcoming internal resistance and mobilizing human resources toward shared strategic objectives.

An integrative overview of the analyzed theoretical frameworks indicates that organizational change cannot be reduced to any single determinant be it innovation, leadership,

communication, or teamwork but rather that its success emerges from the synergistic interplay of all these factors within a specific organizational context. Consequently, future empirical research should be directed toward developing integrated models that encompass the interactions among these identified determinants, as well as identifying moderating and mediating variables that mediate their impact on organizational change outcomes.

The empirical research conducted confirms that the deployed linear regression model possesses exceptionally high predictive power ($R^2=98.2\%$) and a negligibly small forecasting error (MAPE=1.15%). From the standpoint of individual factor impacts, the Level of Innovation ($\beta=0.416$) emerges as convincingly the most vital driver and key generator of success within the observed model of business change, exerting an effect twice as powerful as the levels of leadership, business communication, and teamwork. Strategic focus must therefore be directed toward innovative processes and creative solutions, while managerial skills (leadership) and organizational structure (business communication and teamwork) serve as the necessary logistical support for the actualization of these innovations.

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