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Change Management in Conditions of Technological Stagnation

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Abstract

The study is aimed at systematizing and developing theoretical and methodological approaches to transforming companies operating in the context of introducing new technologies. The objective of the research is the theoretical substantiation of an integrated change management model that contributes to enhancing the adaptability and competitiveness of organizations under conditions of technological stagnation. As a methodological basis, system analysis and the synthesis of scientific publications over recent years on strategic management, organizational adaptation, and innovation management in various industries were used, as well as the analysis of statistical data from international economic organizations. As a result, the existing barriers hindering effective transformation were identified, and an authorial integrated model of proactive adaptation in technologically mature environments (IMPA-TME) was proposed, combining components of strategic foresight, ambidextrous leadership, the development of ecosystem cooperation, and the enhancement of workforce flexibility. The model directs companies toward anticipatory rather than reactive managerial strategies, contributing to maintaining competitiveness and ensuring sustainable development in the absence of radical technological breakthroughs. The information presented in this article will be of interest to top executives, specialists in strategic development and organizational change, as well as researchers in management and innovation.

Keywords: *Change Management, Technological Stagnation, Organizational Adaptation, Mature Markets, Strategic Renewal, Low Technological Growth, Ambidextrous Leadership, Corporate Innovations, Labor Productivity, Integrated Management Model.*

INTRODUCTION

The modern global economy is experiencing a paradox: notwithstanding the unprecedented pace of development in areas such as artificial intelligence and biotechnology, many traditional and formerly leading industries exhibit clear signs of saturation and a slowdown in the innovation process. The concept of technological stagnation reflects not a complete disappearance of innovations but a reduction in their radicalness — the dominance of incremental and sustaining improvements over genuinely breakthrough solutions, which adversely affects labour productivity dynamics. According to forecasts, a slowdown of global dynamics is expected from 3.4% in 2022 to 2.8% in 2023, with further stabilization at 3.0% in 2024. The decline will be especially sharp in advanced economies: from 2.7% in 2022 to 1.3% in 2023. In a realistic alternative scenario that assumes heightened stress in the financial sector, global growth in 2023 may fall to about 2.5%, and in advanced countries below 1%. Global headline inflation in the baseline scenario decreases from 8.7% in 2022 to 7.0% in 2023 due to cheaper commodities, whereas core inflation will decline more slowly. A return of inflation to target benchmarks is unlikely in most cases before 2025 [6]. Such circumstances pose a serious challenge for management, since classical management models oriented towards the implementation of radical technological breakthroughs are losing their effectiveness.

The relevance of the study is determined by the need to develop new managerial strategies that enable organisations not only to adapt but also to grow under conditions in which technological leadership no longer guarantees a sustainable competitive advantage. The scientific gap lies in the insufficient elaboration of comprehensive change management models specifically tailored to the technological plateau. Most existing works focus either on management during periods of rapid technological growth or on crisis-management approaches under conditions of decline, whereas management within mature technological environments remains inadequately studied.

The objective of the study is the theoretical substantiation of an integrated change management model that enhances organisational adaptability and competitiveness under conditions of technological stagnation.

The scientific novelty resides in the proposal of a comprehensive proactive adaptation model that unites disparate strategic management and organisational behaviour concepts into a single system for effective navigation within mature technological ecosystems.

The author's hypothesis posits that successful change

management on the technological plateau requires a shift of focus from the pursuit of radical innovations to the development of organisational capabilities for continuous microadaptations, strategic manoeuvring and the efficient utilisation of existing technologies through the strengthening of human capital and ecosystem interaction.

MATERIALS AND METHODS

For systematization the sources were grouped into four thematic clusters: institutional and post-growth approaches to strategic choice under conditions of stagnation; digital transformation as a tool of organizational change; innovation management and the role of leadership; influence of external factors and forecasts.

Within the institutional approach strategic choice is considered primarily through the lens of the influence of normative and cognitive structures on organizational behavior. Thus Struckell E. et al. [1] emphasize that under conditions of stagnation and high uncertainty managerial teams tend toward holding logic, in which alignment with external institutional expectations and risk minimization play a key role. In contrast Pansera M., Fressoli M. [4] develop a framework of innovations without growth, in which technological changes are interpreted not as a means of expanding scale but rather as a resource for enhancing the adaptability and resilience of communities, which is especially relevant in the context of deficient investment dynamics.

Approaches to digital transformation highlight the radical rethinking of organizational processes through the implementation of digital platforms and tools. Appio F. P. et al. [2] synthesize existing research, identifying three main trajectories: optimization of internal processes, creation of new digital business models and development of ecosystems, each requiring specific change-management strategies and cross-functional interaction. In a more applied vein Suvalova T. V., Ashurbekov R. A., Suvalov O. S. [3] analyze the digitalization of onboarding processes for new employees, where automation and onboarding portals reduce the time required to absorb organizational culture and decrease turnover among young personnel. Meanwhile Pang T. Y., Lee T. K., Murshed M. [8] in the field of digital healthcare underscore the need to integrate educational programs with the principles of the fifth industrial revolution, shifting the emphasis to hybrid competencies (technical + socio-communicative) and flexible learning architectures. The article by Croitoru G. et al. [12] shifts the focus to the micro level—leadership practices and their contribution to organizational effectiveness in the digital era. The authors operate with the concept of effective leadership, grounded in flexibility, empathy, and the ability to coordinate digital initiatives with corporate strategy. In the work, change management is interpreted as a socio-psychological process of mobilizing personnel and creating a digital culture, even when technological innovations are incremental. The proposed approach can be designated as behavioral-institutional: the leader constructs bridges of meaning between digital tools and organizational values, which allows the maintenance of change dynamics amid an external shortage of technological breakthroughs.

The third cluster is devoted to traditional innovation management and the role of leadership in the context of stagnation. Tidd J. [9] in a review of innovation-management practices highlights a systemic approach in which key stages are idea generation, project selection and commercialization, recommending that under conditions of decelerated growth particular attention be paid to human-resource innovations and optimization of internal structures. Hortovanyi L., Szabo R. Z., Fuzes P. [11] detail the role of middle management in the process of strategic renewal, emphasizing that middle management acts as a bridge between top management and operational staff, managing resistance and facilitating the transformation of organizational culture. In turn Ma Y., Zhang Q., Yin Q. [10] investigate the relationship between intra-corporate faultlines in top teams and the effectiveness of green technological innovations, showing that cognitive diversity can both stimulate creativity and intensify conflict, which in a stagnation environment requires particular attention to facilitation and consensus processes.

The fourth cluster considers external factors shaping the framework of technological stagnation. Guo S. et al. [5] analyze the historical and projected impacts of climate change and technological progress on soybean yields in China, demonstrating that technological adaptations only partially compensate for the negative effects of ecological shocks. The IMF report emphasizes a combined shock—financial turbulence, inflation, pandemic aftereffects, and external conflicts—which establishes a regime of sustained uncertainty and depreciates classical linear models of change planning [6]. The Gartner industry analysis illustrates the paradox of stagnation without stagnation: the aggregate volume of the technology market remains substantial, yet growth is concentrated in narrow segments (for example, cloud services and cybersecurity), while the broader technological frontier is expanding more slowly [7].

Despite the wealth of approaches the literature demonstrates significant contradictions. On one hand institutional and post-growth concepts emphasize structural constraints and adaptive frameworks [1, 4]; on the other hand digital transformation and innovative practices are interpreted as universal solutions for overcoming stagnation [2, 3, 8, 12]. Some authors reduce change management to internal process optimization [9], whereas others focus on the influence of external shocks and ecological factors [5, 6, 7]. At the same time questions of synergy between digital transformation and sustainable practices (for example the relationship between HR innovations and green solutions), as well as mechanisms of dynamic interaction between macroeconomic trends

and behavioral strategies of individual organizations under technological stagnation, remain underexplored.

RESULTS AND DISCUSSION

The phenomenon of prolonged stagnation in technological development, manifested in the deceleration of productivity growth rates and the reduction in returns on capital investments in research and development across a number of priority industries, is giving rise to a new management paradigm. Analysis of key macroeconomic indicators unequivocally points to the consolidation of this trend. Thus, according to OECD monitoring results, the share of R&D expenditures in the GDP of European Union countries (27 states) in 2023 remained at 2.3 % [5]. At the same time, according to World Bank estimates, global economic growth rates continue to decline, intensifying pressure on the corporate sector and compelling organizations to seek alternative sources of efficiency enhancement under conditions of limited room for technological breakthroughs [6]. In this environment, traditional strategies aimed at continuously accelerating the innovation cycle are increasingly yielding to comprehensive approaches that emphasize deep restructuring of internal processes and adaptation of existing infrastructure [7].

An additional complexity stems from the fact that technological stagnation creates its own specific barriers to the implementation of change: unlike a crisis, which serves as an obvious catalyst for transformation, prolonged smooth stagnation is perceived as routine, engendering organizational inertia and heightened resistance to reform. The main characteristics of environments with differing dynamics of technological growth and their associated managerial challenges are systematized in Table 1.

Table 1. Comparative characteristics of management environments depending on the rate of technological growth (compiled by the author based on [2, 4]).

Characteristic	Environment of rapid technological growth	Environment of technological stagnation (plateau)
Key driver	Breakthrough technology, new market	Operational efficiency, customer experience, business model
Type of innovations	Radical, disruptive	Incremental, sustaining, process, marketing
Competition	Race for product/technology leadership	Price competition, market share struggle, customer retention
Source of growth	New market capture, creation of new needs	Cost optimization, loyalty enhancement, adjacent niche exploration
Investment focus	High-risk R&D, M&A of technology startups	Modernization, staff training, CRM systems, marketing
Main challenge	Managing chaos, rapid scaling	Overcoming inertia, motivation for continuous improvement
Leadership requirements	Visionary, risk-taking	Transformational leadership, coaching, facilitation

Transition from the exponential growth phase to a state of stagnation requires a fundamental rethinking of the management paradigm. Nevertheless, many organizations continue, by inertia, to apply canonical methods that no longer correspond to current realities, inevitably leading to a weakening of their competitive positions. At the same time, despite the overall slowdown of the global economic cycle, it is projected that total worldwide information technology expenditures from 2023 will increase annually by more than 5%—from almost 1.5 trillion dollars in telecommunications services revenue to 224 billion dollars in data center systems expenditures. In 2024 expenditures will amount to 1.5 trillion, however a significant share of this growth is driven by inflationary factors and the need to support existing IT infrastructures rather than by investments in fundamentally new technological solutions [7]. These data indicate that the emphasis is increasingly shifting from radical innovations toward the refinement and maintenance of existing systems.

As a response to the identified contradictions, the Integrated Model of Proactive Adaptation in Technologically Mature Environments (IMPA-TME) is proposed. The novelty of this model lies in its systemic, comprehensive construction, which unites four key interdependent components into a single change-management loop specifically adapted to conditions lacking external technological drivers. A schematic representation of the model structure is presented in Figure 1.

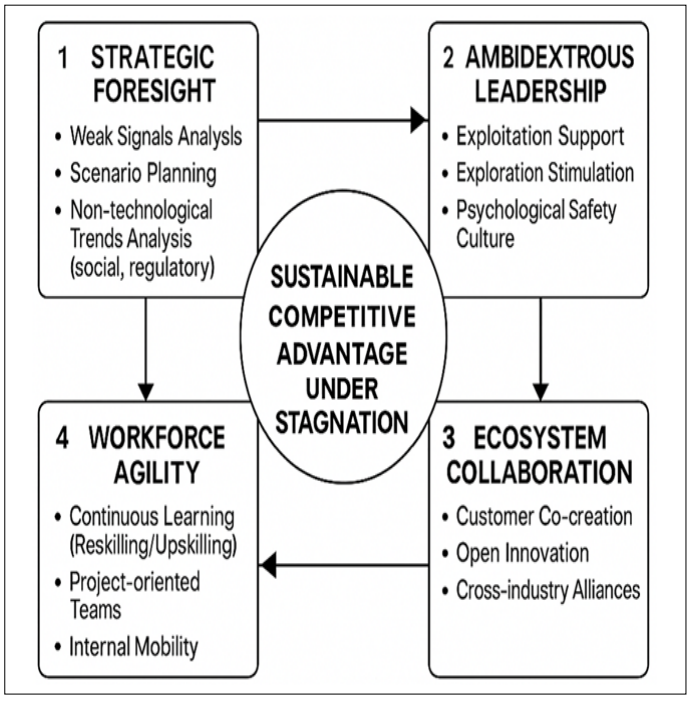

Fig. 1. Integrated model of proactive adaptation (IMPA-TME) (compiled by the author based on [1, 3, 8, 12]).

The components of the IMPA-TME model, comprising strategic foresight, ambidextrous leadership, ecosystem collaboration and workforce flexibility enhancement, will be examined below

In conditions of technological stagnation the key is not so much predicting the next major breakthrough as systematic work with weak indicators and interdisciplinary analysis of non-technological vectors – demographic, social and regulatory. Such an approach makes it possible to identify trends capable of spawning new market niches or hidden threats. Rather than rely on a single forecast-based strategy, it is advisable to develop multiple alternative development scenarios and to design adaptive response plans for each. Multiscenario planning strengthens organizational readiness for various future eventualities and increases overall business adaptability

Effective leadership under such conditions requires implementation of ambidextrous leadership, which integrates two sometimes contradictory paradigms. On one hand, improvement of existing business processes (exploitation) is necessary to maintain operational efficiency, while on the other continuous search for and testing of new opportunities (exploration), albeit on a limited scale, must be pursued. Leaders must adeptly switch between directive management methods aimed at standardization and optimization and coaching practices that stimulate creative activity within teams. At the same time the formation of a climate of psychological safety becomes a central element: employees must feel free to propose unconventional ideas and to experiment without fear of reprisal [1, 3, 8]

As internal reserves of innovation become depleted, organizations are forced to expand the boundaries of their R&D activities and to construct ecosystem collaboration. Co-creation of products with key clients, partnerships with scientific and educational institutions and the formation of industry alliances enable the pooling of resources and competencies to develop integrated solutions. It is important to note that despite a record increase in the number of international patent applications, their geographic concentration is shifting towards Asia, obliging Western companies to diversify their partner networks rather than rely exclusively on internal growth of their intellectual property portfolios

Finally, enhancement of workforce flexibility remains a crucial factor for sustainable development. On one hand, qualification requirements for employees continue to rise despite the slowdown in technological updates, and on the other obsolete hierarchical structures constrain the speed of response to change. Systemic reskilling and upskilling programmes are required, along with a transition to temporary cross-functional project teams formed for specific tasks and disbanded upon their completion. Such an organizational architecture accelerates internal mobility, promotes knowledge exchange and enables organizations to operate with maximum agility [9, 10, 11]

Implementation of the IMPA-TME model implies phased execution of the stated transformations, as clearly illustrated in the simplified roadmap (figure 2)

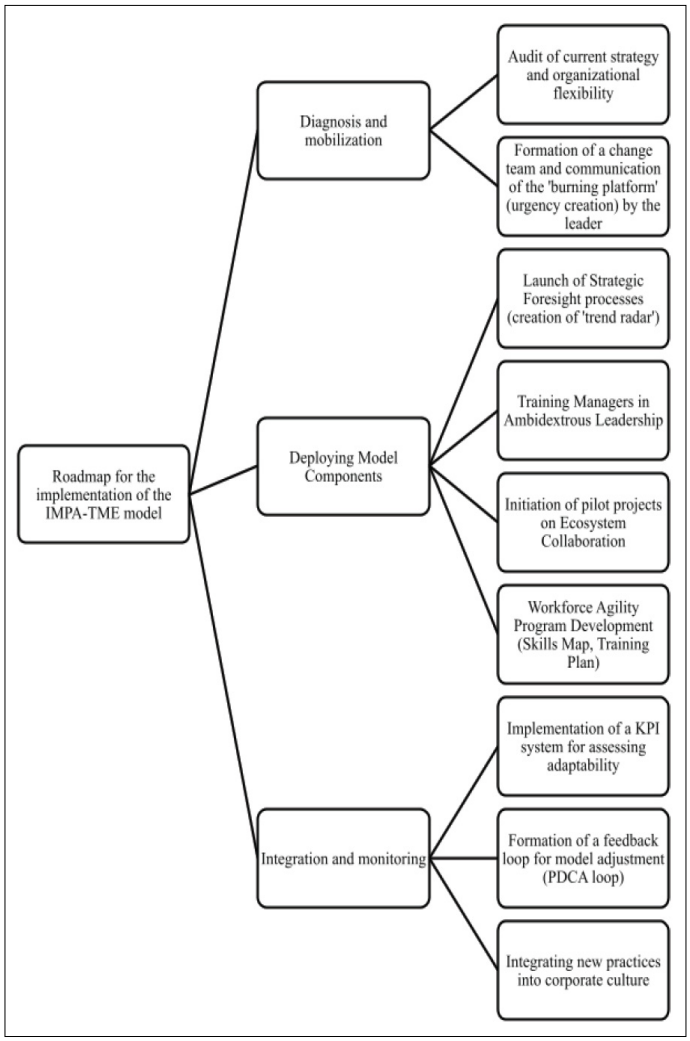

Fig. 2. Roadmap for the implementation of the IMPA-TME model (compiled by the author based on [4, 9, 10])

Thus on the basis of the foregoing it should be noted that effective management of transformations under conditions of technological stagnation is not reduced to the search for a magic technological solution but constitutes a multi-stage, methodically calibrated effort to restructure an organization's internal processes, develop managerial potential, strengthen human capital and expand the scope of interorganizational interaction. The IMPA-TME model functions as a theoretical framework for implementing this comprehensive restructuring, providing organizations with the tools to establish a sustainable competitive advantage founded not on a one-off technological breakthrough but on the continual enhancement of adaptability.

CONCLUSION

In the course of the study, an analytical investigation was conducted on the issues of managing transformations under the conditions of a technological plateau characteristic of mature sectors of the economy. The analysis demonstrated that traditional methodologies focused on radical innovations lose their effectiveness with a slowdown in the pace of technological renewal and a shift of competitive struggle to non-technological areas — to service quality, operational efficiency and the adaptability of business models.

The outcome of the work was the proposal and theoretical substantiation of an integrated model of proactive adaptation in technologically saturated but mature environments (IMPA-TME). This model represents a comprehensive managerial tool combining four critically important directions: strategic foresight, ambidextrous leadership, the development of ecosystem interaction and the enhancement of workforce flexibility. Unlike disjointed and one-off practices, IMPA-TME forms a closed cycle of continuous improvements, allowing organizations not so much to react to external challenges as to proactively construct their own competitiveness in the absence of clear technological growth drivers. Thus, the hypothesis advanced in the study regarding the necessity of shifting the managerial focus from seeking innovations to developing internal organizational capabilities is empirically confirmed.

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