

Bochulia Tetiana

**INNOVATIVE CHANGES IN DEVELOPMENT
OF ENTERPRISE INFORMATION SYSTEM:
DIGITAL TRANSFORMATIONS, BEHAVIORAL
TECHNOLOGIES AND NEW DECISIONS**

Monograph

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The monograph is devoted to the research of new perspectives in the innovative development of information systems of enterprises, due to the trend of digital transformations in business and the spread of behavioral technologies in decision-making systems. The progressiveness of digital and managerial innovations in the development of the information system of the enterprise with the characteristic of a new type of thinking is grounded, which allows forming information with high qualitative parameters. The suggestions and recommendations set forth in the monograph are formulated for the innovation development of information systems, information processes and, accordingly, information provision of development of the competitive sustainability of modern business.

The monograph contains proposals that provide a comprehensive solution to the modern tasks of quality transformation of business on the basis of perspective modernizations in the information provision of management.

For leading scholars, young scientists, business representatives and professional organizations, all stakeholders.

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PREFACE

Traditional economic development tools available explain changes in processes and superficially affect qualitative transformations in business, which reduces their effectiveness. The phase of simple changes has remained in the past, as the modern economy is under the influence of the trends of modern times, which inherent digital innovations and behavioral technologies. An indication of modern business is the initiative in change and readiness for transformation in new directions. First of all, such changes and transformations are possible after the development of a detailed development plan based on information of new type.

For the development of modern business it is not enough to have a certain amount of data and to study all aspects, factors and trends of the external economic environment. It is necessary to organize a new information system that can provision all subsystems of the enterprise with the necessary resources for decision making, development, change, transformation and implementation of the strategy. Such a system should take into account changes in the external nature and re-designing of processes, benchmarks and plans in the enterprise's internal environment. Author's view on methods, tools, principles, measures and factors of fundamental changes concerning forming new type of information system is given in the monograph that provides a large-scale project for business transformation under the conditions of innovative development projects.

The author not only develops the information processes of the enterprise, but also substantiates forming a new type of thinking that affects the organization of the information environment and affects the management processes with their development on the basis of achieving a balance between behavioral technologies and digital instruments of changes. The author's suggestions are made to provide innovative business development as an initiative project in which the idea of qualitative transformations concerning information management is laid.

The monograph will be useful for scientists, business representatives, members of professional organizations and all interested persons.

SECTION I

MANAGING AN INNOVATIONS IN INFORMATION AND MANAGERIAL SYSTEMS FOR THE MODERNIZATION OF THE ECONOMY

I.1. Digital innovation in the changes and development of modern business

The modern economy is the product of changes and transformations that caused by the development of theoretical and axiomatic constructions of economic systems, activation of dissemination of knowledge, definition of intelligence as driving force of business activities, changing of social order – incipience of «Generation Z». An illusory has become attempts to neutralize irresistible process of transformation of the modern world, which is characterized by information and communication phenomenon and prevalence of technologies. Today for companies and organizations primary should be the objective is not growth but prosperity [45].

The radius and vector of enterprise management have changed under impact of substrates (basic moments of effectiveness) of modern economic systems development. Therefore the question of management efficiency has become new dimension and topicality that has prompted to the study of dialectic of information intercourses concerning formation and dissemination of management influence without its asymmetry and absolutize of monocontrol at acceptance alternatives of management decisions.

The question of business management development is disputable among the scientific community, because scientists solve the problem of provision long-term competitive success of enterprises that depends on management decisions, projects and development scenarios. Innovations that needs to modern economy are emerging from chaos.

Practical recommendations on intensification of critical thinking and promote integration of sustainable development at enterprise model with expansion of core competencies are proposed in scientific research [33].

Scientists are multidimensional considered issues of improvement of mechanisms, instruments and means management of business structures. At the undeniable value of scientific researches of domestic and foreign scientific community is topical need to develop theoretical and methodological recommendations and organizational provisions of compositional management and creating a fundamentally new subsystem of enterprise management that developed through the design and implementation of digital-strategy.

Formation of strategy begins with determination and assessment of problem situation that for core competencies is implemented by formulation of five basic tasks of its management: definition of priori (existing) core competencies; development of programs acquisition of core competencies; generation of core competencies; expansion of core competencies; monitoring and development of measures to protect core competencies with preservation of leadership [21].

Companies need a new alternative approach, according to which a combination of stability and constant change is formed that correspond to the tendencies of development of the world economy [37].

In modern conditions, business is developing under the influence of digital transformations and depends on the level of adaptation to the new conditions of economic relations. Today the digital development is a trend that has a significant effect on the economic situation of not only companies, and also countries [44].

This is a new dimension of reality with the definition of digital leadership that implies the possession of certain skills and competences. Because the technologies change the skills that needed for each profession, employees will have to adapt to this. This means that education and training should be flexible enough to quickly and effectively teach people of new skills. It is necessary to hire, to train and keep high-level specialists in the digital sphere, as well as to develop digital skills in existing personnel [48].

Digital-strategy is not only a powerful subversive force that changes the traditional organizational structure of companies. This is an environment of a culture of continuous innovation and constant

adaptation to all new trends and market opportunities. For disclosing of the features, trends and prospects of a digital development strategy is necessary to define and substantiate the basic principles, according to which the level of internal transformation increases concerning reorientation of the management system (Table 1.1).

Table 1.1

The principles of implementation of digital-strategy

<i>The principle</i>	<i>Brief description</i>
Simplex-method of solving set tasks	Comprehensive approach to solving of set task with a change in the straightforward process to a continuous cycle from search of problem to real action
In-depth data analysis	Implementation of cognitive technologies for processing of big amounts of data with the formation of operational managerial decisions
Personalization of information	Individual approach to personnel information provision that allows to better understand area of responsibility, to use work time more efficiently, and to have objectively relevant data to complete a task
The culture of cooperation	Orientation to the teamwork with equal incentives and equal responsibility. Direct interaction with the leveling of hierarchical barriers
The timeliness of feedback	Feedback in mode of the real time
The unity of information platform	Create an environment with equal access to information, ideas, changes with the ability to make adjustments with the function of instant notifications
The orientation to behavioral models	Establishing the priority of behavior in the organization of the personnel, performing tasks, guiding influence and processing information
The continuity of study of new technologies	Constant critical evaluation of technologies with an assessment of more effective organization of activity

Such principles are coordinated the development strategy concerning implementation of digital transformation that allows establishing effective information relations in the enterprise management

system in accordance with the new conditions of activity. The growth of activity effectiveness according to the concept of sustainable development depends on the implementation of technological decisions that allow the formation of a new environment with high potential for processing, transmission and storage of information, involving various stakeholders in mode of the real time, which operate with objective, transparent, timely and reliable information.

The digital environment is a new business trend, avoid of which is not possible in the era of the technological revolution.

This is a new requirement of the economic environment that changes the traditional reality of entrepreneurial relations on the micro and macro levels with the introduction of transformational decisions that modify the construction of a business model.

The digital strategy should start with the formation of «digital competencies», ie, the organization of a group of highly skilled professionals, which inherent digital skills that can provide digital initiatives.

That is why we propose two directions of implementation of the strategy, which involves transformation of the company into a digital organization:

1. Human Resource Digital Strategy.
2. Formation of Digital Culture.

In global transformations, the formation of a team is a priority task, the implementation of which involves the organization of a community of professionals with common interests, which are self-motivated that allows them to focus on the special organizational forms, which is characterized by an experimental regime in terms of functional parameters and openness for stakeholders.

The complexity of digital transformation focuses on the formation of a certain mentality and skills, through of which management of a changing, multi-dimensional, partly uncertain environment is carried out with the generation of decisions as a prediction of future requests for stakeholders.

Digital-personnel is a group of people, who are united by a personified behavioral model, based on business processes and which

are focused on the development of cognitive technologies with the priority of a new form of interaction and partnership.

In accordance with this strategy the new competencies of professionals should be introduced, namely, professional talent in the context of digital skills that fit the idea of Digital:

1. Digital-strategist – guiding function at the stages of the formation, implementation and modification of the digital model of development.

2. Digital-marketer – interaction with customers in mode of the real time, the using of digital technology to assess the requirements and promotion of the product.

3. Digital-designer – updating the user interface based on the search for new decisions and borrowing user experience of software products.

4. Digital-datologist – deep analytical abilities, on the basis of which the hidden interconnections and regularities are identified in the information environment with the generation of operational conclusions.

5. Digital-innovator – management of innovative projects and the search for ways to optimize organizational relationships between subsections of a company.

Digital culture is a fundamentally new model of organizational thought, on the basis of which new methods of work with a priority of creativity are introduced that is supported by the predominance of processes of technological decisions.

Digital culture is a three-tier structure:

- the foundation (the first level) is a strategic understanding of new rules and challenges of the market, the economic trends that trigger digital transformation with the further elaboration of principles and methods of activity to bring them into line with the business transformation rules;

- the second level is the realization of the initiative policy, that is, the refinement of the organizational environment in accordance with the new focus of the activity with the priority of flexibility in establishing the interaction between the subsections and bringing leadership qualities to a single denominator, leveling out any manifestations of the hierarchy;

- the third level is an environment of innovative strategies. It is at

the top of the structure that the business model is modified in such a way as to guarantee the effectiveness of the changes through the using of digital technologies. This is the level of managing of the changes that are at the same time the end and the beginning of transformations, which should contribute to improving the idea of enterprise existence.

Digital culture is a step-by-step program of changes that involves: dissemination of the idea of digital transformation (1); developing a scenario of changes (2); reconciliation of the current business model with the innovation strategy (3); implementation of best practice (4); technological and organizational transformation (5); construction of a full-change cycle (6).

Stages of implementation of Human Resource Digital Strategy.

1. The unity of the levels of management – adjustment of the interests and expectations of personnel without management asymmetry. Equal motivation, equal opportunities and means for realizing the potential. Formation of common values, which are shown by the managerial personnel as an example for borrowing that provision of unity of beliefs and commonality of goals in transformations and changes implemented in value propositions.

2. Global strategy of the changes. At this stage the clarification of a new paradigm of activity is carried out, which determines the priority of digital skills that encourages the leadership to form a digital team. The complexity of this stage is that every employee should objectively assess his abilities, conclude on the need for training and formulating ideas, how to quickly and qualitatively master new skills. The main thing is to answer two questions that in aggregate form the problem: «Why should change?», «What are the barriers to change?». The first question makes it possible to understand the reality of the need for changes, the second one- to identify the negative factors that inhibit changes. Depending on the obstacle assessment, a strategy is developed for developing new competencies. The most attractive can become «paired changes», that is, training employees not alone, but in groups that allows creating a community environment and assisting in the acquisition of new skills.

3. Provision of the efficiency of change – the time to develop of

new digital technologies is small, therefore, it is necessary to consider the necessity of timeliness of digital transformations, and therefore, to quickly adjust the personnel to changes. Accordingly, a behavioral model should be developed, on the basis of which the range of ideas expands, how to actualize processes and adjust them for transformations. At this stage, the level of personnel's initiative is manifested and the opportunity to delegate leadership powers to lower levels of management hierarchy is considered. This is a special form of interaction, when predictability of changes is provided that allows freeing up additional time for the introduction of new technological decisions.

4. Investigation of directions of alternative partnerships (binary approach) – mostly to solve the problem the personnel are attracted who have the appropriate professional competence that logically in terms of specialization and acquired qualification. This is a peculiar new vision to a decision when proposals and recommendations are not collected by departments, but from individuals who seek to make them. It is important to understand that the range of ideas should be as great as possible, however, without their critical assessment. It allows in a new way to consider the impractical decision, at first glance, that at pair comparison will help to distinguish the main idea. At this stage, the boundaries between the competencies of specialists are partially «erased» and everyone is in the same conditions, and the ideas and decisions are evaluated without the personification of their developer. Under this approach the hidden motivational potential is released, because each employee, understanding his priority position, will correct the gaps in knowledge to make a proposal, as ideas for change. The slogan of this stage can be defined: «Make without coercion» that accordingly saves money and owner time.

5. Formation of the team of «ideological innovators». At this stage, it is important to organize the work of staff, based on the idea of sustainable development, which based on the implementation of new technologies. This is a test of personnel readiness to respond to changes in trends and assess their adaptation to developmental needs. Accordingly, an estimation of a human asset is carried out, its moral

deterioration and perspectives of actualization that prompts for joint work and support at the stages of performance of tasks.

6. Adoption of objective risk. Practice shows that human potential is hindered by misconceptions about the risk that is a factor that blocking the decision and leads to an incorrect assessment of the situation, which has occurred as a result of past and current events. At this stage it is important to identify of the employees, which can objectively assess the risks and calmly perceive them without excessive complications. Today exactly the riskiness allows taking leadership positions and there should be employees in the team, who will inspire the staff to reject excessive caution. Such employees should have a high level of professional knowledge and skills. Actually it is construction of behavioral microclimate model that is characterized by the nature of accepting risks as an appropriate element of activity, and therefore, allows gaining primacy among competitors, who do not refuse the negative assessment of risks.

7. Formation of digital culture. It is important to create a culture not only common, and personalized for each employee. It is a peculiar change in ideological thinking, when each employee transforms his beliefs and principles in accordance with the idea of company development that manifests itself in the development of new competencies that were not originally characteristic of the employee. Similar cultural transformations are useful and orientate the personnel on the development of professional knowledge and skills «full-life» according to a personal assessment of real skills and their compliance with development strategy.

8. Development of skills of deep data analytics. Today it is not enough just to perform well and evaluate the result. It is necessary to foresee events, phenomena, factors, changes, preferences of stakeholders that is possible during deep processing of data. Today, this seems realistic given the technological capabilities of modern programs, which provide information about the preferences and interests of clients that allows changing the company's strategy in advance and making adjustments in business processes. At this stage, it is important to develop personal

skills in work with blockchain technologies. The first allows, based on analytical algorithms, to evaluate data and generate information for making decisions. Blockchain allows to forming available registers with transparent and timely information that eliminates information asymmetry and risk. It is an opportunity in mode of the real time to process and transmit information, which is really in demand for accomplish the task.

9. Incitement to action. The availability of knowledge, experience and skills does not always mean the effectiveness of work, because efficiency implies activity. Therefore, at this stage, models of efficiency are being developed, or incentive motives for the implementation of competencies. It is a personified approach to the psycho-emotional characteristics of each employee with the creation of mini-teams, the leader of which should necessarily be a decisive person, who will be able to detect hidden potential in a timely manner and ensure its effective implementation. A similar policy is part of Kaizen strategy, or continuous improvement that is characteristic of initiating change and transformation.

The mechanism of implementation of Human Resource Digital Strategy.

1. Implementation of the personnel planning program. The human resources planning system should be implemented that is fully harmonized with the strategy of digital transformation. Firstly, it is necessary to conduct a questionnaire and obtain data on the actual accordance of staff skills to the digital conversion program. After that, it is necessary to define the list of positions that provide the strategy of digital transformation. According to the selected group of digital innovators it is necessary to determine the complex of professional competencies. The next step is to train either on their own (using the experience of the personnel according to the evaluation of information from questionnaires), or through the increase of competences in specialized courses. It is also important to introduce a model of best practices, constantly demonstrating the benefits of digital employees to motivate of the entire team of employees. Instruments of encouragement, first

of all, of intangible essence should be implemented that will become a stimulating factor for the realization of professional potential.

2. Creating a collaborative environment. There is no need to allocate a separate room for its organization – it is enough to organize the cooperation of personnel through the using of digital technologies. Need to take care of the union of employees not only by professional, but also by behavioral models. Beforehand it is necessary to think over the mechanism of placement of creative ideas with open access and the possibility of evaluating and commenting. Such means of collective interaction allows bringing solving the tasks set to a new level and provides an effective communication climate. Employees should be interested in professional communication that will be an alternative to social networks, for which mostly free time is spent.

3. Demonstration of progress. This stage is understandable in accordance with the logic of the behavioral model of the implementation of digital transformations, because any system functions as a set of elements, and therefore, it is necessary to indicate the contribution of each employee in achieving the goal. In scale whole project this allows to control each individual element and in advance identify bottlenecks that need to be refined.

Stages of the formation and implementation of Digital-culture.

1. Creating the foundation for the formation of Digital-culture. This is the stage, at which every employee needs to be aware of the need to introduce a culture of digital transformation. It is important to initiate the formation of a new ideology that is considered as the basis for the development strategy.

Otherwise, the Digital-initiative will not be effective, and will become a project on paper without the possibility of its implementation. At this stage, it is necessary to answer two important questions: «What technological changes should be introduced?», «Is the team ready for changes?». Observation of the reaction and behavior of the personnel is should become obligatory, in order to identify the susceptibility of employees to change and transformation.

The slogan at this stage should be: «Transformation for all», which is

a tool of motivation to perceive transformations as effective instruments that necessary and effective for all participants in the activity.

2. Creating a collaborative environment and setting up an operational feedback. The idea of intersubject relationships is laid in the collaborative environment that manifest themselves in the mutual influence on the system of formation of knowledge as an integrated form of organizational unity. Common context of the collaborative environment is configured for convenient communication between the participants in the management process without excessive information overload and the avoidance of asymmetry of information on communication nodes. In such environment the culture of information communication should be organized that envisaging timely notification of all participants with an appropriate reaction. This allows making adjustments to the decisions, actions and processes, and therefore, increases their effectiveness. Collaborative environment and communication culture are formed on the basis of a healthy partnership with the avoidance of management asymmetry and the implementation of horizontal guiding influence, that is, a specialist who is «near» the task should to make a decision and to act. This allows saving time and providing fulfilling the task with using of high professional competencies.

3. Personalize of digital competencies. Technological solutions are various, complex and require special skills. Therefore, it is necessary to clearly understand, what kind of digital culture model will be implemented, and also, what technological innovations are introduced. This is a constructive policy of organizing activity with eliminating unproductive costs and effectively implementation of the potential. The content of personalization is to mastering those instruments and methods that are objectively necessary and important.

4. Focus on creative potential. Professional talents are the driving force behind transformations, which is why they are faced with increased demands for the development of new projects that based on the respective values, rules and installations, which integrate into a single goal. At this stage the ability of the team to meet the challenges of digital conversion with the definition of the prospects for the development of digital skills is assessed.

5. Formation of a digital team. Each employee is characterized by various professional competences in accordance with the acquired knowledge, education and previous work experience. It's not possible to create a 100% digital company from a previous traditional analogue in a short time. Therefore, it is necessary to organize a group that will be responsible for implementing the program of changes. For this group it is necessary to create a separate information environment, in which employees can organize the proper information communication, make presentations of projects and keep track of the results of changes. Creating of such environment does not mean separating a group of employees with giving them exclusive authority – this is an urgent need to create a «core» of a digital team that is capable of embarking on changes and inspiring other workers by own example. With such an organization the all interested parties will be able to operate relevant information and monitor the results of transformation that contributes to strengthening the corporate spirit.

6. Construction of a behavioral model of Digital-culture. Digital decisions are an indisputable, effective instrument changes and improvement of activity, however, by their proper implementation. In itself the instruments are not effective, therefore, it is necessary to construct a behavioral model that takes into account the peculiarities of the company's activity and corresponds to the features of the collaborative environment. At this stage, it is necessary to make decomposition of the development strategy with the allocation of bottlenecks that need to be developed. Such focus makes it possible to concretize the problem and concentrate time and funds on its solution, objectively focusing on professional competencies. Such pilot decisions are effective for the whole scale of the company after their testing and evaluation of the result.

The mechanism of digital culture implementation.

1. On the basis of an integrated approach it is necessary to identify the problem that is characteristic for the process of setting up digital conversion. This problem concerns the collaborative environment and a professional partnership, therefore, it is necessary to answer the core

questions: what inhibits the process of transformation?; what are personnel expectations for change? what can be done better?; what corporate benefits are really available in the future?

2. To identify the factors of influence that allows realistically assess the situation and provide a real solution to the problem of digital collaboration organization. It should be understood that assessments require internal and external factors, and to make the guiding influence on the first seems more realistic. This is the stage, when senior management coordinates a policy of transformation with a clear description of opportunities and barriers that need to be addressed.

3. To plan the implementation of changes. This should be a road map of transformations in the corporate culture that allows clearly assessing the implementation stages and get acquainted with the details, which allow organizing the micro and macroclimate of the collaborative environment.

4. Preliminary evaluation of changes. It is important to respond in a timely manner to transformations and evaluate them for efficiency, because the productivity of the collaborative environment depends on the effectiveness of the implementation of the entire program of changes. Initially, regular measures to assess changes in the field should be introduced, which will allow prompt response to the absence or presence of expected results.

Options for implementing the strategy.

1. To provide the implementation of the personnel Digital-strategy, it is necessary to take the following important steps:

- focus on digital personnel;
- motivation to study of new technologies. Today, to acquire new knowledge, it is not necessary to spend time and money to enter specialized institutions, and it is possible to using of open learning platforms. At this stage the policy of supporting learning with a demonstration of their own experience should be implemented by the leadership.

2. To provide the implementation of Digital-culture, it is necessary to take the following important steps:

- to provide a free communication space. The company works as

a system of subsections, so it is important to establish interaction between all subsections. Each subsection has its own peculiarity, which is realized in behavioral models, which should be common to implement in a collaborative environment, but without neglecting personification;

- forming a partnership. Partnership models can be different: both on the basis of professional competences, and according to personalized preferences and interests. The most effective are the binary associations, when employees with different professional talents come in groups, but close to the interests involved in the logic of the digital development strategy.

Digital instruments and platforms, if applied correctly, can dramatically improve the organization's ability to effectively implement changes [36]. But instruments should not be perceived as identifying a solution to a problem. The company must clearly understand, which behavioral models it needs to be instilled and find technological decisions that would help to make the necessary changes.

The best decisions are highly focused and directed on solving narrow tasks. Their installation on the whole organization begins only after testing in the framework of pilot projects (Table 1.2).

At the same time, the chances of success grow, when management actively encourages the feedback from users and incorporates it into processes that give people a sense of direct involvement in the transformational initiative.

The effect of the strategy's implementation, firstly, will manifest itself in transforming the company's activity according to trends and the challenges of a modern, globalized world, when it is impossible to underestimate the benefits of the technological revolution.

At the moment, those companies are winned that understand the new ideology of the economy in time and begin the process of digital transformation. It is therefore important to be the first. In any case, the digital transformation provides a new level of activity using the latest technology of customer engagement and partnership.

Table 1.2

**Project plan, resource provision of the
Digital strategy implementation [10]**

<i>Human Resource Digital Strategy</i>	<i>Digital culture</i>
<ol style="list-style-type: none"> 1. Developing a human resources planning scenario. 2. Personalize the experience. 3. Removing of hierarchical constraints. 4. Study of new technologies. 5. Focus on digital talents. 6. Introducing of the idea of perceiving objective risks. 7. Demonstration of the result 	<ol style="list-style-type: none"> 1. Introducing of the policy of «equal». 2. Using of analytical instruments. 3. Using of knowledge and experience of personnel 4. Introduction of new methods of work. 5. Formation of the digital community. 6. Implementation of the binary approach. 7. Expansion of motivational instruments

This is the driving force behind the changes that focuses on innovative decisions or implementing analytic applications for processing big amounts of data. The effect in the deep analysis of data is realized when the formation of operational decisions that allow to predict the preferences of clients. It is instrument for influencing on the decisions of the stakeholders without manipulating information.

The effect of the Human Resource Digital Strategy is the timely reorientation of staff to obtain trend knowledge and skills. Supporting the development of digital talent will have unquestionable advantages along with traditional professional competencies.

The effect of the development of digital culture is the formation of a developed model of collaborative environment. Today the success of the company’s sustainable development depends exactly on the team, therefore the organization of effective partnership will allow to ensure the proper human capital, which is a key factor of activity.

Consequently, the digital strategy is a new prototype of the reconstruction, namely a flexible modular set of instruments and models that can be adapted to the needs of each company in accordance with the expectation of continuous development and effective implementation of activity.

Digital instruments allow to form behavioral changes and modify processes in an environment where interaction between management and staff acquires new value. Therefore, enterprises should choose the strategy of development of digital initiatives as the most promising for the modern stage of the economy and entrepreneurial relations.

1.2. Coordinated factors of development of new innovative decisions of technological reorientation of the management system

The trend of informatization has become an objective and organic phenomenon of transition to a new level of the economy, increasing its adaptability to the planetary scale of production and distribution of hardware and communication equipment, software products, information systems and networks. Today, various progressive directions and tools of informatization of business processes are being developed, in particular using the results of the era of technologies for the technologizing information and managerial processes to improve the quality of information for decision making [47].

The formula for a new economy focuses the entrepreneurial structures to changes in management parameters with the emphasis on the priority of innovative technologies, which allow for a balance between costs and results.

Actuality of technologicalization in the development of information provision of management increases with the understanding of the direct dependence of business on information and illustrative examples of the successful implementation of technological projects in the formation of data to substantiate managerial decisions. Information in management, decision-making and task execution should be a special that is characterized by signs of relevance, timeliness, comprehensiveness and reliability.

The last sign is crucial for the development of the enterprise activity, since it allows really assessing the situation and making decisions according to place and time.

The transition to the definition of new indicators of development of information provision of management involves the formation of complex programs and scenarios for the development of technological competences, regulation of the development of decisions and control of the adaptation of information processes to the policy of technologization.

We propose to consider the system of changes in the information provision of management thought the three-dimensional space of informatization, institutionalization and intellectualization, contributing to the achievement of a new quality of information processes with their coordination in accordance with the formation of a multivariate tree of the hierarchy of the goals of activity and development of the enterprise (Figure 1.1).

The axis of «intellectualization» reflects the fundamental components of a large-scale, socially and economically necessary measure to improve the quality parameters of information development as a factor in a new policy of the modern world.

It is not only messages, but their implementation in the processes of knowledge, balancing knowledge, the implementation of irrational thinking in accordance with professional competences that determines the ability to generate new knowledge and ideas, laying the foundation of the plasticity of information processes.

The «informatization» axis characterizes the potential of technical, technological and communication actualization of processes that regulate and coordinate regulatory, organizational, socio-economic, scientific and technological processes, stimulating changes in information processes, as a tendency to change the conditions of economic systems development.

On the axis of «institutionalization» lies the line of modern paradigm of economic development as an objective process of development and consolidation of rules, norms, principles, requirements, their systematization and implementation to meet the needs of development of socio-economic relations.

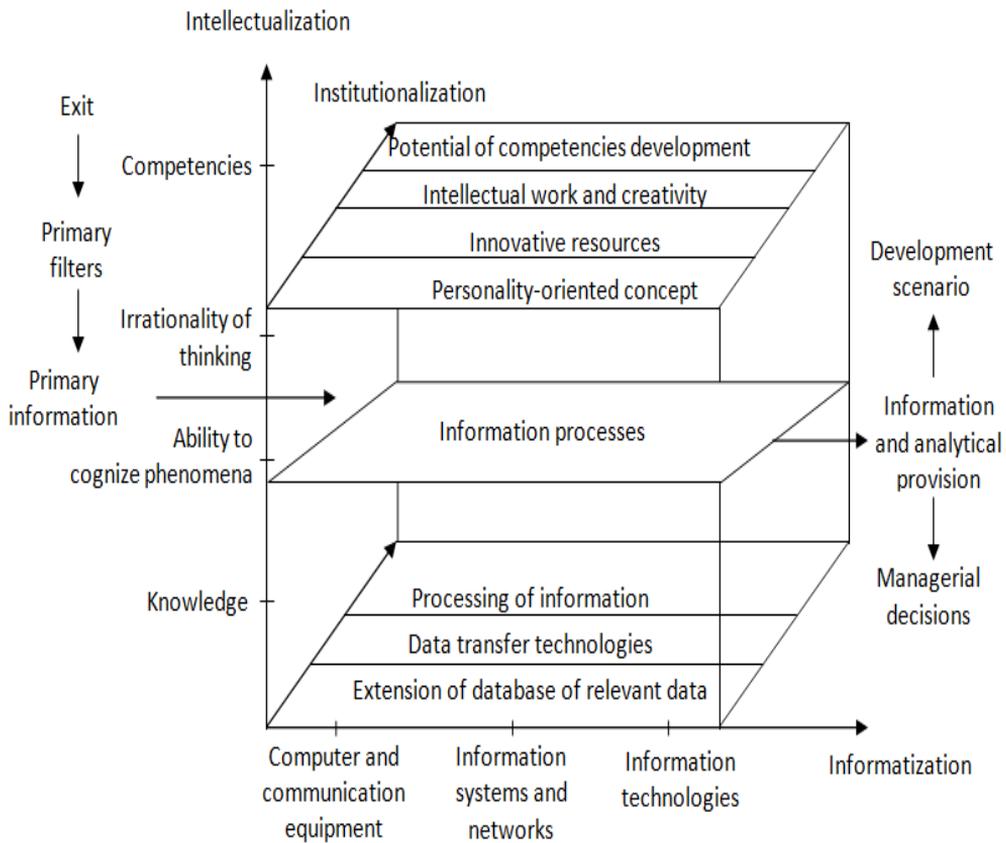


Fig. 1.1. Integrated system of changes in the formation of information provision of management

The modern institutional paradigm of the development of modernized economic systems acquires a technological character, because it is characterized by incentive motives with the development of mechanisms of reaction to the models of socio-economic relations, in which the technological aspect of the analysis of processes is realized.

The technologization of information provision of management is a method of implementing continuous transformations in the qualitative characteristics of the information cycle through the integration of technological decisions that necessary for the creation and dissemination of new methods. The main emphasis is put on the intensification of technological transformations, using an integrated approach to information processes.

Entrepreneurial structures are currently on a qualitative transition to a new economy, choosing informatization as the only right decision for sustainable development. In such circumstances the essence of management is changed that acquires a new information-oriented character, and, therefore, is characterized by modern factors – new advantages, professional development and procedural complexity (Figure 1.2).

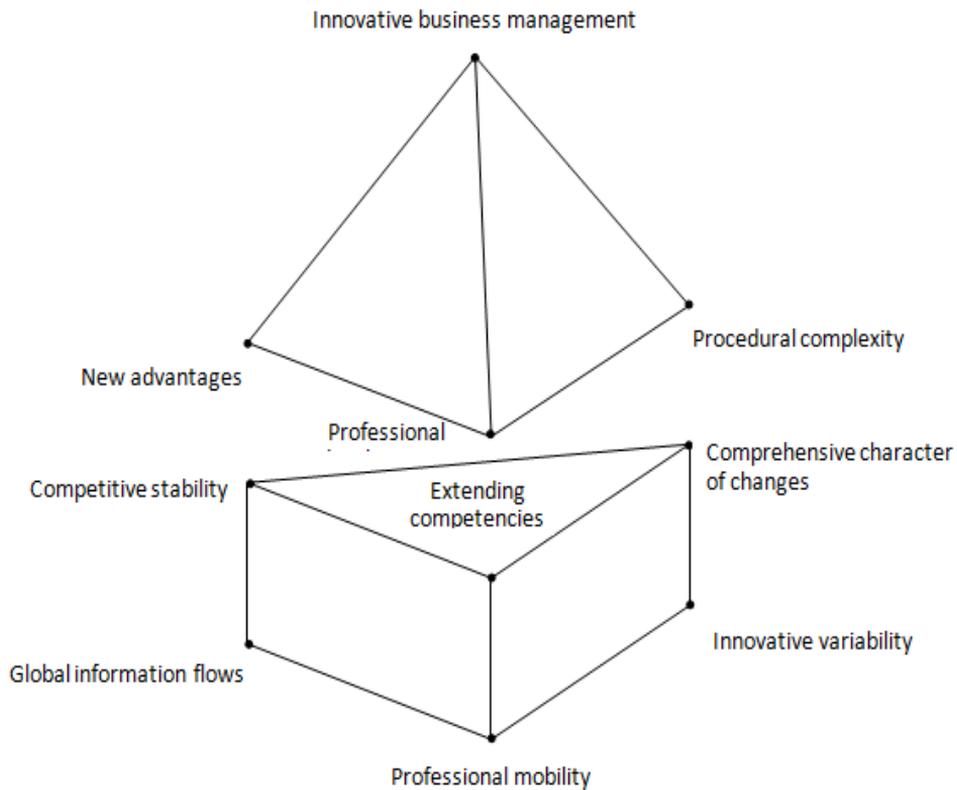


Fig. 1.2. Key factors of innovation managing a business

The basis for the development of factors of a new type of management are indicators of an innovative economy that characterized by global information flows, professional mobility and innovation variability. Global information flows are the main competitive advantage in today’s economy, because involve expansion of information exchange between different national and cultural systems at the macro level. Such consolidation of information flows covers all spheres of economic

activity and allows timely prediction of events and compilation of relevant reaction models.

It means that formation of decisions in a proactive that corresponds to the current trends in the development of information flows, in particular:

- accessibility of information – Big Databases as analytic applications available to users without limiting their access to relevant data;
- multimedia nature of information messages – data is formed in a single information shell based on technologies of processing, transmission and storage of information;
- forming the models of information provision based on the development of models of national identity – the creation of common information space with understandable and relevant data.

In accordance with the constant nature of changes, competitive stability is characterized by the cyclicity and continuity of the process of development of management functions with the control of the parameters of the environment. The essence of competitive stability is the ability of an enterprise to create competitive advantages on an ongoing basis, guided by the functional capabilities of the business with purposeful functioning in accordance with the specific circumstances of development, that is, the competitive potential.

Achievement of competitive stability is possible if business processes are organized taking into account the innovation instability and the high level of risk of changes. Innovative variability inherent in socioeconomic processes that is due to the increased degree of development requirements and the corresponding proposals that involve changes and transformations. Innovative instability is the reverse side of innovation development as a consequence of the mismatch of business process organization to trends of changes. Also, the high level of risk of information events is the characteristic feature of innovation instability, because the management system does not have time to react adequately to changes, and therefore uses information that is relevant, but does not meet the requirements of innovation development.

Qualitative activation of information and business processes involves the introduction of innovations that implemented through the complexity of changes that should cover all management subsystems. The complex nature of the changes is realized by adapting the business to innovations that changes its organizational, information and technological architecture. This allows getting the effect of material and immaterial nature that accordingly affects on competitive stability and allows managing innovative transformations at the micro level.

Managing changes requires relevant knowledge and skills that involves expanding professional competencies and achieving professional mobility in the enterprise management system. That is, management personnel should adapt to a new professional environment with willingness to acquire new knowledge and training that involves the dynamic growth of professional competences with the principle of «Life-long learning».

Professional mobility lies in two planes - horizontal and vertical. Horizontal professional mobility is the development of an a priori knowledge and competencies, which are consistent with the professional level of development without radical changes and the transition to a new level of skills.

Vertical professional mobility is the transition of specialists to a new level of professional competences with the acquisition of new knowledge and skills that allows performing new tasks and changing the type of professional activity. In professional mobility, the ability and willingness of a specialist to reform the acquired knowledge and skills for individual and general development is realized.

Professional mobility is the basis for the development of professional activity in accordance with the intensification of the information environment that involves the acquisition and testing of new knowledge and skills. The requirement of an innovative economy is the continuity of training and the expansion of professional competences that are needed not only for horizontal professional mobility, but above all for the transition to a higher professional level.

A good specialist, who can perform only separate tasks that corre-

sponding to the level of his knowledge, is not a key resource for modern business. Today, need a professional with a wide range of knowledge and skills, who are able to quickly adapt their skills to the tasks of varying complexity. Exactly the team of such specialists allows implementing in the organizational structure the principle of vertically-oriented subordination without asymmetry in management, and therefore, without a crisis of managerial impact.

Thus, an important factor influencing the development of innovative managing business is the focus on highly professional specialists, who change the traditional idea of decision-making exclusively at the highest level of the management hierarchy. Today, each specialist takes a responsible decision for business without waiting for an order from the management that corresponds to the essence of the developed economy [26]. The requirement of professional mobility is explained by the complication of business processes that are characterized by dynamic changes and which are subject to increased requirements for obtaining a qualitative result. The procedural complexity is the result of the complexity of the changes, which are explained by the logic of development expectations. In a modern economy, the structure of business processes is complex and depends on various internal and external factors.

Business process modeling is done not only on the basis of functional parts, but also on additional procedures, such as information management, expert assessment, developing models for responding to risks, information analytics, etc. Accordingly, management processes that are actively supported by new information technologies become complicated. Models of management processes become more flexible and construct on the basis of technological architecture with the design of various decision options for their timely assessment of prospects and risks.

Thus, informatization is a determining factor of development and allows systematically influencing the complications of business processes, expansion of competencies and competitiveness. In business, which is at the intersection of various information flows, the vast majority of

competitive advantages are available on the basis of information. It is important that information for management is formed not only from data about business processes, but also takes into account messages with relevant information essence: statistical information from the Big data system; expert conclusions; professional opinion.

Exactly the information allows business avoiding the turbulent environment that caused by changes and quickly adapt to changes in the innovative economy. In information architecture necessarily have to be implemented automated systems, databases of rating and analytical data, internal corporate communications, technological and technical innovations, information expert systems.

Information as a new advantage also has a reverse effect on business, if not ensured proper management of it. Big Databases, intense information impact, complex information communications create a certain chaos in the management system that increases the level of uncertainty and riskiness. The forming new information should carried out structurally, in a common architecture without violating the integrity of the messages. The need for information management is due to the presence of its characteristic features that affect its stability as a source of competitive advantage.

Information management is a natural process for modern business and is characterized by certain factors: the intensity of information processes and flows; the introduction of analytical applications for data processing; expansion of types of information; construction of a complex information structure; the formation of a mobile model of information processes, etc.

Forming information management policy involves the implementation of innovations in information and managerial processes with the formation of a productive model of changes in the information system of the enterprise. Information management implements a complex system of informational attributes of decision-making that allows to radically change the organizational structure with the formation of a single information space (Table 1.3).

The development of modern business depends on information

that is an attribute of the economic environment as a complex system of socio-economic relations with an orientation towards innovations and changes [39]. The system approach to the forming information environment accordingly prompts changes in thinking, on the basis of which data are interpreted and implemented management actions.

Table 1.3

Attributes of information management of enterprise

<i>Attribute of information management</i>	<i>Characteristic</i>
Integrative effect for management	Simplification of managerial processes as a result of accelerated movement of information between managerial subsystems with the formation of a network management system. Such model can be both horizontally and vertically oriented – without the allocation of a management center and with an emphasis on it
Mobile configuration of management	On the basis of the network management model, adaptation and maximum flexibility are ensured for changes caused by the development of the economy. The technological basis of information management allows not to change the organizational rules and to develop different strategies with the formation of several alternatives to managerial decisions
Binary	The information management on a technological basis is implemented as a centralized and decentralized one at a time. This is the establishment of information coordination in different scenarios that can cross over to substitute without the risk of information asymmetry
Sign of the organizational resource	Managing information as organizational resource is carried out taking into account the processes of processing, transmission and storage of data. Such resource cannot be fully used; over time, such a resource loses its usefulness, but can acquire qualitative parameters in accordance with the complexity of the tasks of the enterprise activity

Thus, today it is necessary to investigate a new type of thinking, which is the parameter of a new management paradigm, on the basis of which a holistic system of organizational, economic and informational provision of innovative processes is formed.

I.3. Transformation of information provision of management on the basis of the development of a new type of thinking

Development is always accompanied by changes and the need to reorientate to new conditions, rules, principles, methods and procedures. The new order requires readiness for change and acceptance them as logical and objective element of improvement that involves the transformation of the ideology of the development of society and economy. Modernity is represented by social and economic changes that based on a redefinition of general postulates and the adoption of new laws as the basis of sustainable development.

Changes and innovations are associated with various formal and informal institutions, the development of which is conditioned by the influence of human (human factor in the field of innovation). In the context of the development of economic systems, innovations are considered as a process that combines systematic rebuilding and spontaneous updating, that is, the process of accelerating the update through the implementation of new decisions for business.

Thus, the renovation and improvement of the economy take place on the basis of activation and development of innovative processes in accordance with the time context of the external economic environment. Among the components of innovation potential attract informal components of development that provided with economic and noneconomic incentives. Human presence is characteristic for achieving stability of the environment with the intensity of changes in the socio-cultural sphere, changing the role of rights in development from the passive (object) to the active (subject).

In the innovative development of society and economy, a person occupies the place of the main innovator and the growth of innovative business potential depends on the level of development of knowledge, reason, motivation, professional competence. Development depends and is controlled by a person who is «a concentrated society, which is complemented or expanded by human». Human activity is transferred to the activity of the enterprise, as a result of which its activation and adaptation to changes and transformations characteristic of the modern economy are carried out.

The potential for active activity and progress (passionarity) is transferred by the individual to all processes of his life, which in aggregate is a platform for the development and use of scientific and intellectual resources. The usual phenomenon became the introduction of innovations, which are characterized by a combination of radical changes in the very essence of the object, a distinctive feature of which is the «reset» of the previous result in order to introduce a new result with provision of its dynamics.

In the conditions of globalization, intensification of hypercompetition, the activation of the informatization process, the process of intellectualization, which is characterized by a fragmentary manifestation predominantly at large enterprises, is gaining momentum for the development of the economy, in order to increase the material capital and intensify production. Intellectualization is a much deeper concept that encompasses continuous and dynamic processes of generation, accumulation, reproduction and dissemination of knowledge, the implementation of which contributes to the production of new knowledge, thus increasing the level of development of the economy and society.

Dominant scope of reason and labor in the evolution of the world involves the development of an institutional environment based on knowledge. Knowledge as a factor in production is a strategic resource of modern economic systems, contributing to the gaining new core competencies. Knowledge occupies the first place in the system of «knowledge – science – technology – production».

They do not arise suddenly, to their receipt is preceded by a stage

of processing of various information that characterizes all aspects of the world. Accordingly, the model of the institutional mechanism of enterprise management changes, in which the interests, benefits and prospects of each group of subjects of mutual relations are coordinated.

Knowledge as an asset, provision, core competence characterizes the component of intellectual potential, which is the structural basis of innovative development of enterprises and economic systems in general. Knowledge as a provision facilitates interaction of enterprises with an external economic environment through their dissemination and reproduction on the basis of changes and transformations of information, economic and social systems. Knowledge as an asset facilitates the activation of mechanisms for the development and reproduction of conditions, rules and guidelines that affect the model of interaction between economic entities.

Knowledge as the core competence provides the interaction of management subsystems, taking into account the behavioral aspect of the development of the information system, the incentive actions of which are the need to adapt to the new environment conditions, caused by the global information space. Generation and dissemination of new knowledge is a feature of innovatization, that is, a characteristic of a qualitative level of transformation, innovations in activating the enterprise.

Innovatization as a process of development of economic systems has become the norm for the enterprise, which involves the development of a new information management policy as a factor in stimulating the potential of the transformation of socio-economic relations. Innovatization is not only the sum of fundamentally new technologies, key and intellectual decisions and knowledge.

This is a field of free ideas that covers issues of organizational and methodological provision for continuous improvement of the enterprise, reproduction of rules and norms governing the development and dissemination of innovations for the development of economic systems. Innovatization is characterized by the unity of technologies, intellectual decisions, the study of values, motives and history of the development

of economic systems (enterprises) in the global scale of generation and dissemination of innovations, realized through the generation of new knowledge, actualization of the methods and concepts of economic development with the formation of multidimensional information links and economic relations.

Conceptualization of the concept of «innovatization» involves the development of economic science with the study of the laws and factors of the processes of modification, transformation and generation of innovations for adapting the economy to the globalization of information and technological space.

An integrated approach according to which innovatization is seen as a process that involves the continuous improvement of economic systems, the generation and dissemination of knowledge, the introduction of new technologies, the adaptation of systems to changes based on technological and intellectual factors, is the most thorough and also covers all the defining features of its terminological-categorical filling.

Innovatization is a deliberate activity in generating innovations for direct impact on their implementation, resulting in an increase in the efficiency of economic, social and information systems characterized by the continuity of change and development through timely response to factors of the environment, adaptation to new conditions of interaction and activation of communication coordination.

The integration of informatization and intellectualization processes contributes to the formation of a model of timely response to changes in the environment with the use of fundamentally new technologies and scientific and intellectual resources.

Innovatization as a process of generating and disseminating innovations, the result of managing change involves the priority of human activity, namely, the controlling mind.

Innovatization is an identical concept to innovative development, because it is characterized by continuity, a sequence of changes of a qualitative nature that are irreversible and logical.

The essence of these concepts is the availability of the possibility and reality of changes that provide a continuous process of improving

the social, economic and information systems, which not only expose their competencies, but also develop new features and properties that correspond to time context of the world modification.

A distinctive feature of innovatization (innovative development) is the self-improvement, self-management of economic, social and information systems through the dissemination of the results of intellectualization, which allows achieving a new quality of socio-economic and informational processes in the enterprise and in the global environment. Innovative development (innovatization) is characterized by the mobility of processes with their adaptation to the conditions in which economic, social and informational systems function, thus effectively implementing the «theme – rema» algorithm (known information – new information).

Innovative development of the economy is expressed through the formation of conditions for the support and implementation of innovations, which is ensured by generating changes for the development and dissemination of new knowledge, covering the level of a separate system, which has a systemic character, is implemented comprehensively, taking into account changes in the components of the internal and external environment as an existing reality and an objective response to changes in the system itself, based on objective and subjective principles of innovation. Innovative business development contributes to the achievement of a higher level of its key competencies, which ensure the strengthening of the competitiveness of the activity, regardless of the favorable of the external economic environment.

Innovative business development is based on the actualization of socio-economic values through various results, which are provided on the basis of the development of a number of intellectual and technological solutions that make up the individual business model of the business entity.

This is a deeper and more complicated category than the traditional group of values and traditions adopted as a structure of relations between employees of an enterprise – organizational, methodological, informational and technical means and methods for carrying out

activities within the set goal, which is adjusted through the assessment of financial, economic, informational and cognitive reactions of the internal environment to the rules generated and disseminated by formal and informal institutions.

The multidimensionality of the notion of innovation, which contains in the first place the generation of ideas, knowledge, innovations, intellectual decisions and scientific and practical resources, respectively, requires a set of rules that are limiting the regulator of individuals, stimulating the achievement of a higher level of their interaction in economic, social and environmental systems, coordinating the basic provisions of formal and informal institutions. Innovative development is stimulated by the requirements of various institutions that serve customers of scientific and intellectual resources, innovative technologies, ideas, knowledge development of economic systems, etc.

Thus, the institutional environment forms and extends those rules and requirements that are a means of achieving the goal of innovative development of social and economic systems.

The present-day world is characterized by the ambivalence (ambiguity) of the formation and continuous restoration of institutions and «rules of the game» – institutional competition, which is the object of rivalry between countries for a system of rules, models of national development for leading positions in their establishment and expansion of coverage; the institutional vacuum – the lack of a complete and objective notion that the new «rules of the game» for economic entities in the national economy should be introduced first and who of the subjects will introduce these rules.

All this requires revision of the rules of formal and informal institutions for their conformity to the realities of the modern world with a complex of economic, social and environmental problems, where chaos creates instability and causes the emergence of a new buffer, in which countries end up as a result of the uncontrolled processes of globalization and informatization.

In today's conditions of economic development, enterprises do

not compete for primacy in the movement (which is ineffective), but they try to reach leadership positions at the speed of reaction with the definition of the right direction for further development.

A new direction of development that encompasses all business areas in the world is the application of a management concept characterized by the priority of experimentation planning, the predominance of associative thinking over rational, continuous adjustment of management models, production, economic and information interactions. This innovative concept has already attracted the attention of large companies, which became the tool for increasing the competitiveness of business.

Such an atypical business organization is a response to the need for a reference (standard) version of generalization and synchronization of changes in the new rules of formal and informal institutions adapted to the actual conditions of the development of economic systems.

Innovative business development is the result of activating rational and irrational human activity in the global multimedia environment, which creates better conditions for making decisions, increasing the efficiency of the information process in the formation of multidimensional data to meet various user requests. This is a contribution to the greater effectiveness of the management process through the formation of such information that maximally satisfies the requests of users at all levels of the horizontal hierarchy of the management system.

Implementation of the concept of innovative business development involves the achievement of flexibility (operational adaptation to the conditions, phenomena and changing circumstances) of information and management processes, provided by digital technologies and expansion of intellectual potential in order to create the necessary and sufficient volume of qualitative information for making managerial decisions.

Transformation processes are caused by a new developmental ideology that characterized by the parameters of the synergetic approach as a consequence of postmodern in the formation of a new type of thinking, distinguishing features of which are: developmental

alternatives; hypotheses of options; initiating changes; personalization of information processes; the irreversibility of transformation processes; integrity of transformations. Postmodern ideology of development defines a new stage in entering the information age, the priority value of transformations in worldview and socio-economic relations.

The trend of information activity has allowed identifying a new development factors – information, technology and knowledge, the production and implementation of which is a priority for the modern economy.

Science moves forward, generally, proportionally to the mass of knowledge that received earlier. However, today's rapid transfer of information and the replacement of some data by others sometimes lead to the opposite effect, when the amount of knowledge does not contribute to the growth of science, and prevents to it.

So, today the totality of information that received by a person per day, can be compared with an array of Big Data, to which data are available from everywhere, structured and unstructured, needed, secondary and frankly unnecessary knowledge [46]. To focus on the relevant or unambiguously and objectively to classify the information, when the sources of its receipt for so many, and the speed of its update is so great, is very difficult and requires extraordinary efforts from any person, and from the person who accepts the decision – the more.

The concept of information development is the basis of methodological transformations in economic processes, the modernization of which is due to the influence of theories of information, global communication and the symbol. Thus, according to separate forecasts at 2020, personal computers will reach the computing power of the human brain; at 2022 will begin to adopt laws that govern the relations of people and robots; at 2026 per unit time it will be possible to extend human life to more time than it has been; at 2040 search engines will work not only on the basis of requests from the voice of a person, but also from opinions; at 2043 the human body will be able to take any form due to nanorobots and cybernetic devices that will be substitutes for human organs at a much higher quality; at 2045

technological singularity will begin – the transformation of the planet into a complete computer, when technical progress will be beyond the limits of its understanding [50].

The establishment of information thinking as a specific category of modern worldview is the result of the conceptual development of economy and society with a change of the status of knowledge and information. The phenomenon of information thinking is to reorient knowledge and skills of the individual to solve tasks of any complexity with the formation of the most acceptable result.

The phenomena of informational thinking combines the parameters of modern society, for which the characteristics of postmodernism are inherent – the priority of information technologies in economic processes and the competencies of «information human».

Thus, the coordination of new values with general rules without asymmetry is carried out in the transition to an innovative type of thinking, in which the ideals of technologically minded society are laid. It is important to determine the proportions between the destructive and constructive content of information thinking as the prospect of actualization of economic processes with a positive result of changing of established worldview.

Special attention should be paid to the artificial intelligence (AI), the development of which today does not cause anxiety, but the pace of its improvement leads to reflection and taking into account trends for the development of all branches of science.

Questions on the use of artificial intelligence in everyday life of every person, as well as enterprises and states are given today attention at different levels. Such reports are prepared at the state and international levels, leading organizations in the field of business consulting, information technology, etc.

The analytical paper prepared by the House of Lords of Great Britain addresses the positive opportunities that artificial intelligence can provide to the British economy through optimization, in particular, business processes and related risks [4]. The authors of the report provide the use of AI and propose to inform the public when used by AI for

making important or sensitive decisions. The introduction of such rule would be, perhaps, the first regulatory measure for the regulation of human relations and artificial intelligence since 1955, when it was first spoken about in the world.

However, researchers note [4], constant attention should be paid to raising public awareness of the digital environment, information technology and, in fact, artificial intelligence. Development and positive trends in the implementation of AI will be based on this. However, it is right to note that, for example, in school programs, it is not appropriate to increase the focus on informatics through the arts or humanities that form creative, contextual and analytical skills.

In fantastic films, you can often find like-minded atnoglobolists people with the slogan «Robots will take our jobs», which in the development of our topic and questions about the future of AI is not without meaning. Questions about the impact of AI on employers and staff were rated by PricewaterhouseCoopers specialists [2].

Quite rightly, they note that changes in employment will relate to retraining staff more quickly: indeed, some professions will disappear, but new and, most likely, more highly skilled will replace them. And such changes are actually a constant satellite of technical evolutions and at each stage of society development we see such changes.

In addition, as before, they will be faster evolutionary rather than one-stage. Thus, the profession of Chimney Sweep before the invention of steam heating (and especially on the basis of natural gas) was also popular and disappeared, too, not immediately, because only gradually steam heating came to most homes. And today, workers who servicing gas boilers are popular and clearly more qualified than chimney sweeps.

Today, perhaps the most successful and illustrative example of the use of artificial intelligence is targeted sales and advertising. This question is devoted to the analytical paper of Deloitte specialists [6].

Processing a large array of data and the decision concerning the offer of a particular product to a certain buyer at the right time – with this task today able to handle the AI system. Researchers note the interesting solution used by RapidMathematix company in the pricing system:

prices in the online store are updated in fact every second depending on the time of day, market conditions, shelf life of the product, season, customers sentiment, etc.

Indeed, the value of goods for each of us depends on many factors and can change at any time, then why not change its value for buyers to maximize turnover and profits.

Insurance companies that count on their risks based on global and individual conditions around the world should always be aware of recent events. Thus, one of the world's largest insurance companies Allianz points out the seventh place in the rating of major business risks impact of artificial intelligence and other forms of advanced technologies.

This type of risk, according to the insurance company's experts, is more significant than, for example, political risk and the risk of climate change [51]. In particular, it is about boosting thanks to the AI of traffic safety. And by 90%, the number of road accidents will decrease. Indeed, with the introduction of the 5G data technology, the integration of car systems with traffic control systems is possible, and the AI will help to calculate the probability of an accident, depending on the speed and trajectory of each car's traffic in the flow, for example, to offer the driver to change the parameters of the movement to avoid the accident.

The main fears associated with the implementation of AI, usually lie in ethical aspects. In the UNESCO publication deals with three categories of such risks [24]:

- deficiency of labor – machines, but not people can do the work;
- consequences for the autonomy of the individual: regarding freedom and security of the person;
- the advance in the development of mankind with more «intelligent» machines, which are able to process much larger amounts of information faster, make decisions, have access simultaneously to a large number of sources of information.

Managing a business involves the constant search for new methods and principles that take into account different situations of uncertainty and are able to form hypotheses for reaction models and alternatives to development.

Managing modern business is in the area of continuous updating of knowledge and expansion of professional competences that involves targeting a new type of thinking, which is characterized by adoption of changes.

A distinctive difference in the organization of modern business is system thinking that aimed at identifying the connection between different phenomena and processes, ensuring the possibility of predicting the reaction of the system to changes in the external environment, with the orientation of the management team to the application of innovative methods, principles and procedures [41].

The importance of system thinking is explained by the need to understand the essence of the relationships and phenomena inherent in the economic systems that form the basis of business.

The development of technologies has allowed bringing to the new level the study of complex systems that contributed to the study of the components of the system in different areas of their characteristics and parameterization of their qualities to predict the results of development. The technological culture is a subsystem of a general economic culture for business and is also associated with political, legal and moral culture.

Technological culture is the result of the development of society's experience in the processing, transmission and storage of information with the acquisition of new knowledge and skills that formed to technological competencies. The development of technological culture contributed to the change of economic values and norms, information traditions and concepts that changed the basic provisions of the development and interaction of economic institutions.

Accordingly, transformational processes that initiated in social and economic processes, cause technological innovations demanded at all levels of business management.

Technological initiatives become effective provided that the idea of innovation changes as a conscious choice through the change of thinking and acquiring new skills, the use of which allows you to obtain strategic advantages through the «benefits of the pioneers».

Technological consciousness means the perception of traditional phenomena and processes in accordance with the ideology of a multimedia society, which rejects established rules with the advantage of perceiving information processes as natural, covering all systems and interconnections.

Transformation in traditional thinking should be characterized by a strategic focus, without fragmentary realization, and therefore, it is necessary to allocate the basic tasks of changes in accordance with the level of influence on the activity of economic systems (Table 1.4).

The overcoming of these problems (see the Table 1.4) involves the rejection of rationalism in the perception of phenomena and the generation of knowledge.

Table 1.4

Categories of problems of information thinking

General problems	Personified micro problems	Personified macro problems
The universe of principles, methods and procedures	Asymmetry in the formation of information provision of management	Untimely of technological response
Principal hierarchy	The inconsistency of information behavior	Complexity of interaction with the external environment
Denial of options and alternatives	Untimely monitoring of opportunities and threats	The priority of capital with material essence

The new type of thinking is appropriate to compare with the «web» (Figure 1.3), to define it as a structured «the labyrinth», therefore, the formation of knowledge takes place at a new level of assimilation of information with the priority of empirical knowledge as more effective for solving tasks.

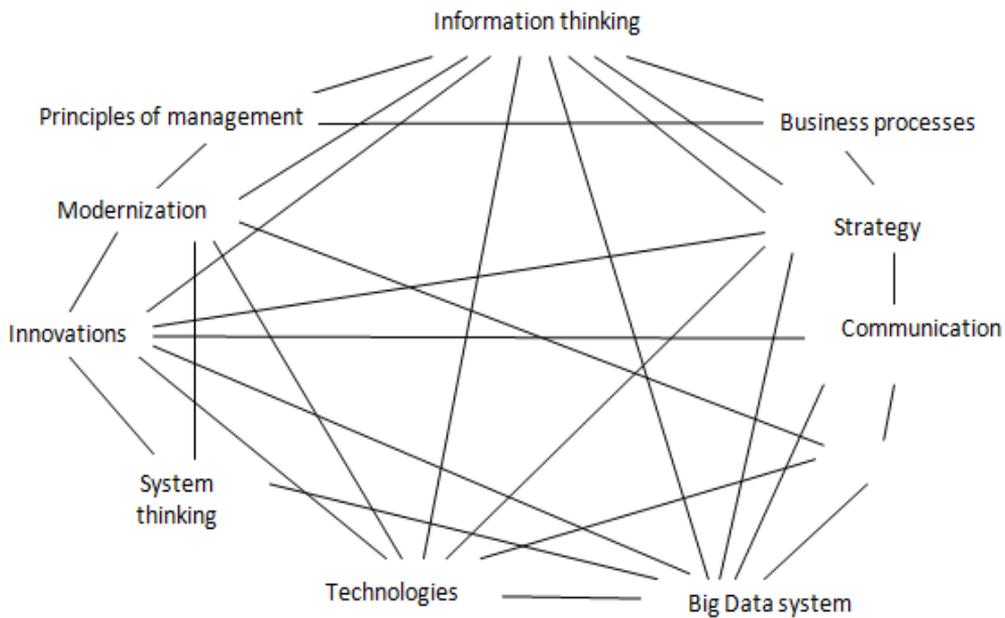


Fig. 1.3. Parameters of informational thinking

Information thinking can be defined as an advantage in the interpretation of information for the formation of knowledge that, by qualitative parameters, significantly differs from ordinary a priori and empirical knowledge. A distinctive feature of informational thinking is the ability not only to generate ideas, but also to implement them, thus ensuring the practical value of knowledge and skills.

The key point of information thinking is the complexity that allows us to formulate solutions to complex problems (Figure 1.4). Information thinking in the modern world has become a symbol of the complexity of the rejection of predictability in favor of a new style of decision-making [5].

Complexity is a factor that can be managed if you have the relevant competencies that are formed on the basis of changing thinking and orientation towards innovative development with the formation of new case decisions [25].

According to business process modeling, the range of knowledge and skills necessary to solve the task varies based on several alternatives, each of which provides a certain direction of strategy development with a set of methods, principles and procedures.

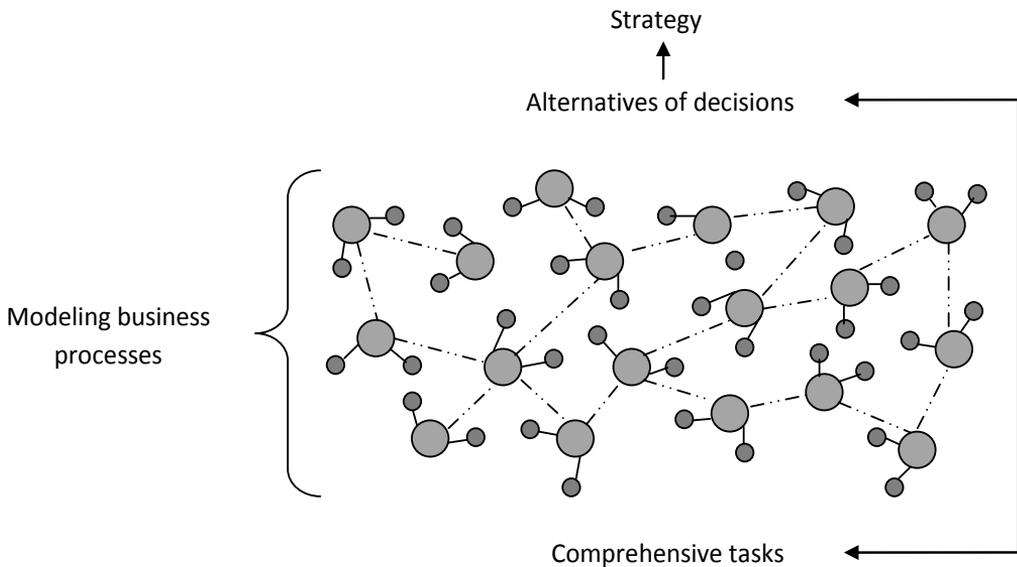


Fig. 1.4. Conceptual model of informational thinking

This means personalizing each decision with a prediction of the end result and forming an appropriate model for responding to risks and possible threats. In this case, the informational thinking focuses on the expansion of information management to maximize the amount of data processing without informational asymmetry and the use of significant amounts of time and money, which greatly facilitates the decision-making process.

Information thinking is the result of rethinking facts without manipulating templates to protect beliefs that slow down the development process. New information maps characterize the objective interpretation of phenomena and events that lies in the logic of information thinking [12].

The model of information thinking is the result of an evolutionary process of processing of information with the use of developed professional competencies (Figure 1.5). This is a change in the style of perception and interpretation of data with access to the process of creative application of knowledge and the generation of information for management at different levels of economic systems. Influence of technologies on bias, intuitive and conscious thinking, emotions

in judgments allowed us to move to a new level of interpretation of information with the formation of unconventional conclusions that meet the requirements of time [27].

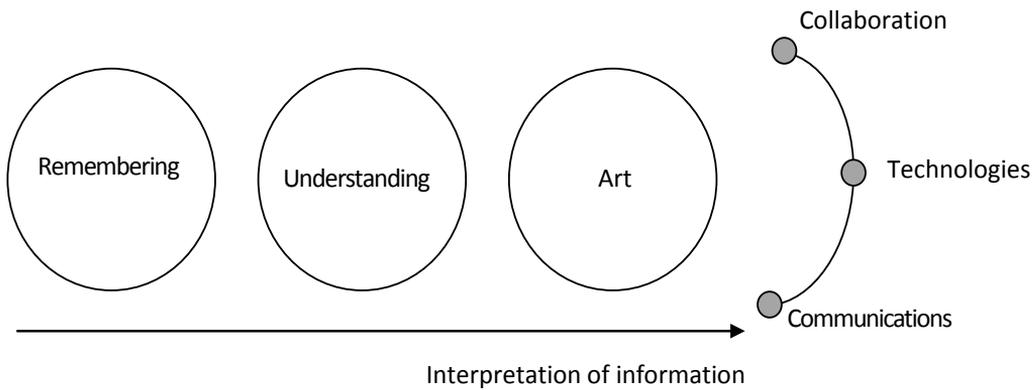


Fig. 1.5. Evolutionary changes in traditional thinking

Information type of thinking is not limited to traditional images, principles and factors. This is a new format of development of social and economic relations with the transition to a new level of reality [16]. The basis of information thinking is the integration of various skills concerning task solving that is not limited only to logical and algorithmic thinking, but also includes the ability to understand and predict the actions of participants of economic relations with the proposal of various ways of solving tasks. The uniqueness of information thinking lies in the multivariate nature of the development of knowledge and skills for the formation of complex information constructions with appropriate parameters regarding the activity of entrepreneurial structure.

Information thinking differs by changing the ideology of understanding information with the formation of new skills that based on new principles of information management:

1. Rejection of the principle of the hierarchy in information – all information is important without the allocation of secondary data. The possibility of taking into account various data without the need for their sorting to relevant and irrelevant became available though the development of information technology. More important is the allocation of

types of information by the criterion of novelty – new information and known information. New information characterizes a more qualitative level of rational cognition, allows to form new knowledge as key elements of managing an enterprise. The new information (for which a message is created) is information that, in the opinion of its author, is capable of making changes to the structure of social and individual thesauruses (amounts of knowledge).

2. The rejection of binary logic – priority of large databases for the formation of universal knowledge. Modern features of information processing allowed to operate with Big Data and apply analytical appendices in the processing of information that greatly improved the quality parameters of the decisions taken.

The use of Big Data promotes the increase of analytical information through its segmentation that stimulates the development of various variants of scenarios of managerial decisions and increases the opportunity to consider and evaluate alternatives to the development of enterprise activity. Multivariate and flexibility of business process scenarios contribute to the quality of performance, and hence, the increased efficiency of managerial decisions and development projects.

3. Rejection of unambiguous information conclusions – any information can be transformed and modified to create different hypotheses and alternatives. The formation of information constructions in accordance with the task and parameters of the business structure has become accessible, which made it possible to personalize each decision with a timely assessment of threats and prospects.

The rationality of information provision in the generation of new knowledge should include a full range of relevant data necessary for the development of professional judgments, on the basis of which decisions are made. For further complete development of knowledge, information is required concerning professional judgment of the individual, but not narrowly focused, and such information that covers the whole field of knowledge.

A significant proportion of information that interests the expert is professional information: the information needed to complete the

task and information for professional development. For the complex extension of knowledge the specialist needs information that allows identifying factors of influence and predicting the dynamics of enterprise development, justifying managerial decisions in accordance with the realities of the enterprise's activity in the market environment, which changes under the influence of the formation of the information economy. On the basis of informational thinking there is a rethinking of the ideology of development with readiness for fundamental changes, up to a complete transformation.

Information thinking cannot exist only at the highest level of management – it should be characteristic of all members of the team, thus contributing to the formation of a unified logic of action and to encourage change as an appropriate measure for the development of not only business, but also for professional competences. In such a change project, the communication component becomes a priority for the formation of a plan for further action that defines a new logic for change and transformation for business (Figure 1.6).

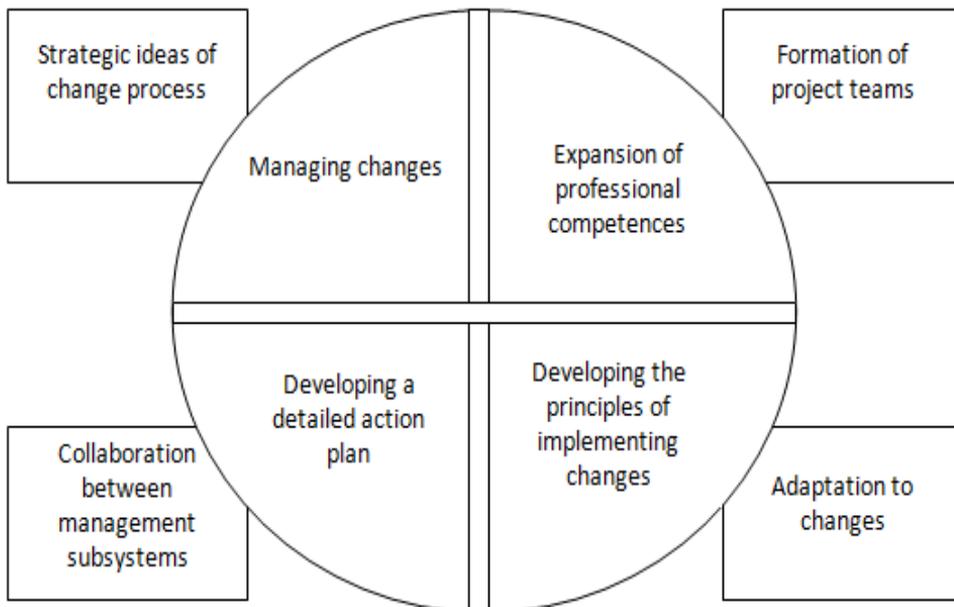


Fig. 1.6. Information and communication environment of implementation of changes

Communication impact are a hidden powerful factor for business modernization, because are the basis for the formation of a unique development project [7].

At planning and implementing changes the communications is the basis for the formation of the appropriate information provision that should cover all management subsystems without informational asymmetry. Through informational thinking, unity is achieved in involving the subjects of management in real action that is expressed in the integration of knowledge and professional competences with a productive exchange of skills, that is, the implementation of a practical approach to changes.

The process of renewal begins with the change in traditional thinking that is the consequence of understanding the futility of established rules, principles and procedures. This is an objective assessment of the business with the definition of the place of the entrepreneurial structure on the map of the external economic environment.

Information thinking inherit the characteristic features of the company's activities that involves identifying unique links in the structure of the principles of organization of activities, in the policy of making managerial decisions, stimulating motivation in regulating professional knowledge and competences, communication policy in the circulation of knowledge.

Information thinking is more inherent to innovators, who are able to recognize a problem that is invisible to others and to offer solutions that go well beyond the usual approaches, that is, they are able to think alternatively without patterns [17].

The development of a project of changes should begin from transformation of the thinking style, and, therefore, meet the conditions of the present and take into account the professional competencies of the project team, which co-determine the new direction of business development [22]. Structuring of the project of changes is carried out on the basis of innovation in the formation of knowledge and the expansion of professional competencies, which in the integrated set give a universal formula for business development (Figure 1.7).

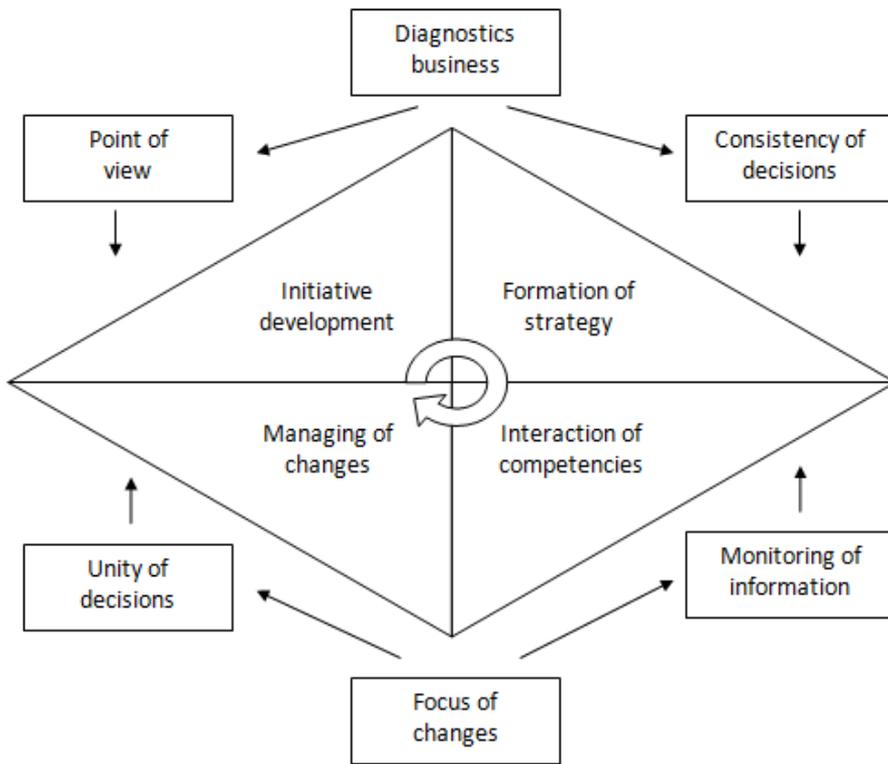


Fig. 1.7. Conceptual model of development project of changes [9]

Changes are initiated by human and ensured by the introduction of new technologies, the development and dissemination of intelligent decisions that, in turn, increases the role of innovations in the development of socio-economic relations associated with the synergetic approach to the management of economic systems. Technological-evolutionary dynamics involves the transformation of the idea of growth with identifying the priority of a new form of sustainable development – the level of information culture.

This indicator goes beyond the economic dimension of business competitiveness and determines its ability to self-development, that is, to enhance the potential of professional competencies, which contributes to the formation of a new platform for reproduction of the potential of the economy in the implementation of technological projects and intellectual decisions.

It is a definition of a new category of basic values of the

transformation of economic systems that contributes to their transition to a qualitatively new state with the formation of the ability to adapt operatively to changes.

Modernization of society and economy in the context of digital transformation, factors and conditions of business development in modern times, expansion of the concepts of information management – all this adapts the subjects of management to the conditions, factors and requirements of the present with a change in the perception of events and phenomena that affects the interpretation of data and forms a new type of thinking. Changes should begin with the adaptation of the management subsystems to the processes of technological transformation and knowledge transfer in favor of new methods, principles and procedures of decision-making.

I.4. Binary approach in the organization of information management of enterprise

Changes are an integral part of development and this fact needs to be taken without its evaluation concerning positive or negative factors. Modernity focuses on transformation in all aspects of socio-economic development. The market landscape, economic trends and business rules have changed significantly, and, therefore, the new technologies of information communications between the subjects of the economy have become new. Understanding and adopting novelties is the first step on the great path of transformations.

Today, each enterprise faces the complication of the conditions for conducting activities that caused by the processes of economic development, increasing competition between market participants and the dynamics of target consumer preferences. Accordingly, extensive business development becomes unpromising that prompts the use of innovative business analytics methods.

The developed technologies of analytical researches have allowed significantly improving the quality of information processes. In particular, any information resources without time constraints and the

volume of their processing are accessible to the information system of the enterprise. The point of effectiveness of information processes in developed analytical systems is in the plane of synergy of the three key parameters of the innovation information system – the uniqueness, relevancy and quantity (Figure 1.8).

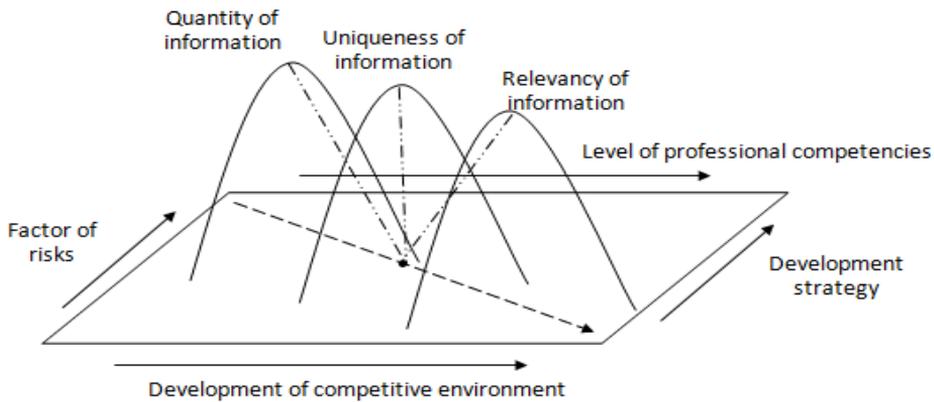


Fig. 1.8. Synergy of the parameters of development of the modern information system

The projection of development of information provision of management on external factors of change is illustrated in Figure 1.8 that is logically explained by the interdependence of information and economic processes.

In accordance with the development of the competitive environment, the adaptation of professional competences to the requirements of the market is carried out, and therefore, the qualitative parameters of information for decision-making increase.

The impulse system of information and analytical provision of management is illustrated in Figure 1.8, that is, the system, in which the information is received and processed according to certain repetitive periods of time – the cycles of economic processes. The impulse system necessarily consists of several elements, which together form the permanent part of the system, namely competition, risks, changes, competencies.

These elements convert information signals into impulses for a management system, on the basis of which the information environment of the enterprise changes with the influence on the decision and strategy of development. For the most part, information systems are not considered impulse- they are mostly determined through the use of the concept of a cycle. In our opinion, impulses are the basis of information processes and information systems.

The flow of information begins with a certain action that due to certain impulse. Data processing is a complex process that is also governed by impulses, which characterize the current state of socio-economic processes.

In modern economy, it's not enough to possess information – it's more important to manage relevant information at the current time. Information processes do not arise spontaneously – their formation is due to actual processes as a reaction to events in society and economy. It is a complex system of relations, which is sensitive to trends and innovations that prompts transformation of material and non-material factors. Today, information allows solving complex problems, rather than local problems.

Most information resources are formed to predict events with an assessment of inherent risks and prospects for them. Information and analytical resources have become more complex with the simplification of processing, transmission and storage of data. Information is at the intersection of projections of the development of the internal and external environment and is a connecting element of past, present and future events (Figure 1.9).

Information is a central element of the business structure, since it allows providing the necessary support to the processes and characterizes them in accordance with the time context and the task. Information is needed to develop a strategy that underlies the activities of any enterprise with different approaches to its formation and according to different forms of its implementation.

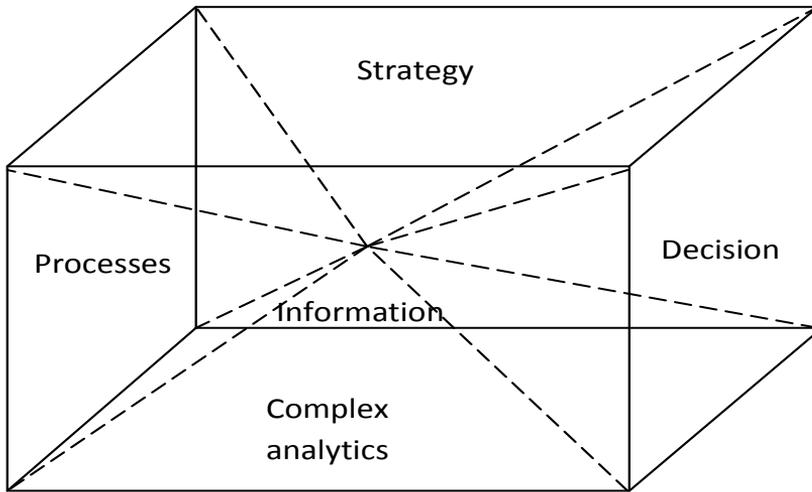


Fig. 1.9. Information and analytical structure of business

Strategies are not static in nature – they have a dynamic structure and change in accordance with objective requirements and circumstances, the impetus of which is external transformations, about which becomes known through information circulation.

The essence of the strategy is implemented through a certain scenario that describes the processes, approaches, methods, principles, procedures necessary for development. Information provides their development and execution that allows revealing the idea of strategy without changing its main idea.

Typically that information necessarily includes elements of the application of professional competencies to business processes with their interpretation in accordance with the time and tasks set. A professional evaluation of information is a prerequisite for the effectiveness of its use in decision making.

Previously known fact about the need for objective evaluation of information today is considered erroneous, since the objective perception of information means the lack of application of professional competences to its interpretation.

Under such conditions, the data remains messages and are not transformed into knowledge necessary for management. Subjective perception of information allows assessing events, risks, conditions and

factors without being an outside observer, but as a responsible person whose knowledge, skills and abilities are the basis of the developed strategy.

Thus, the information and analytical structure of business (see Figure 1.9) is a projection of the categorical characteristics of development in accordance with the conditions of the economy and changes in business relations with a description of the processes covering all stages of activity at the micro and macro levels in accordance with the timeliness of responding to innovations from their implementation into the decision system.

The ideology of the development of the modern economy lies in the plane of managing hypotheses that are put forward on the solution of tasks.

One task – a few hypotheses – one of the most effective decisions. According to this scheme, specialists should work today, because it allows making the decision-making process optimal in terms of time and financial resources, and activating the activity is stable.

In order to maximize the effectiveness of information processes, it is necessary to implement a binary approach – to implement a new model of the information system based on synergy to understand the essence of the problem, impulses of change, timeliness of the reaction and alternative decisions (Figure 1.10).

The synergy of the three levels of information processes is shown in the model (see Figure 1.10) concerning meeting the needs of the management system with maximum approximation to an effective benchmark decision without reducing the influence of informal factors.

The external context of economic relations is projected on the map of tasks that characterize the business state. This allows determining the external impulse that prompts the transformation of activity, and therefore contributes to the formation of the hypothesis of the decision with the characteristics of the actions and specific data, which are necessary for the interpretation of the requests of the management system.

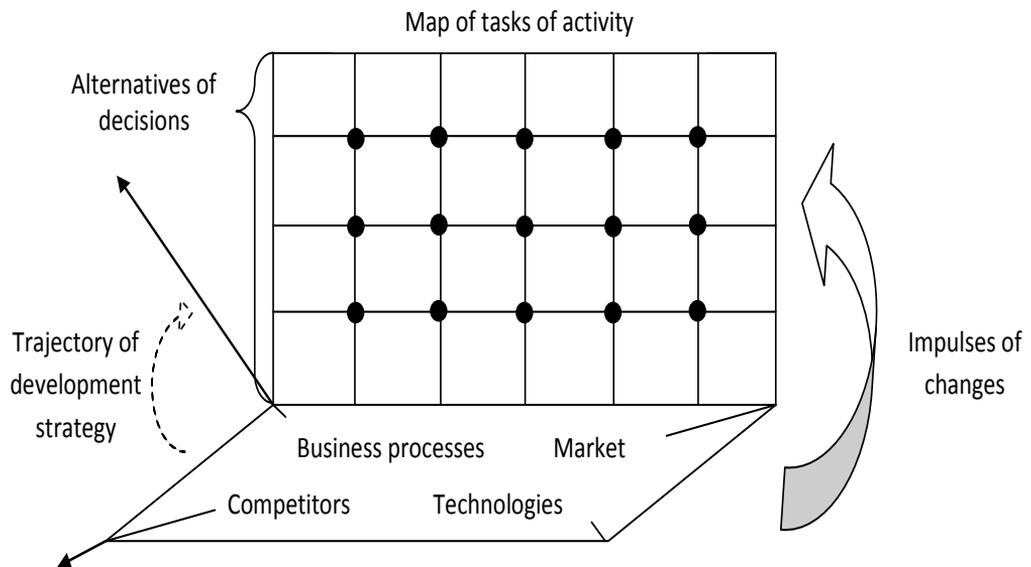


Fig. 1.10. Model of a binary approach to forming information system

The trajectory of strategy lies in the plane of intersection of the internal and external business environment that should be sufficient for sustainable development without minimizing objective risks and taking into account the real market prospects. The main feature of this model is the flexibility, for managers who understand the lack of prospects of one single development strategy and able to form promising alternatives to traditional decisions.

Information management lead to quality new level the prospect of obtaining stable competitive advantages, since it allows not only to adjust the current entrepreneurial activity, but to achieve sustainability in the development of the enterprise as a whole without asymmetry in the final results. Evolutionary transformations touched upon all aspects of the forming information system, but the issues related to the technologizing of information management with the formation of new information communication models to improve the efficiency of the information without additional time and money costs remain incompletely worked out.

Expected effect of changes is possible under the condition of initiative

transformations with the prevalence of innovative developments that corresponds to the conditions of entrepreneurial activity, which are established taking into account the evolution of society and economy. The information competence of the management system contributes to the formation of effective conclusions to ensure the interpretation of events in the dynamics of time, taking into account different models of reaction to current and future events.

Agreed and interrelated information processes of the management system form the self-organization of the formation of managerial decisions in the business development hierarchy. The information function of management system is transformed in line with changes in the organizational structure of business, since any new information processing of economic processes becomes the basis of an information project of change as a natural process of development.

Information provision, forming and use of information channels are demanded by the management system, which depends on the quality and type of data that coming from different sources at different intervals of time. Information interaction of key users is at a new level, when provided wider access to data without informational asymmetry in messages. Information relations involve the exchange not as much data and information as knowledge that is characteristic of the information economy. Interpreted data developed through the use of professional experience and competencies are evaluated as an added advantage in developing a strategy and implementing changes related to the reference point for innovation management.

From the semantic point of view, the information system is a set of various interrelated or interrelated information about the state of the object of management and the processes occurring in it. For a successful business development, the decision to an information system is in opposite directions, which characterizes the subordination of business to information or information to business.

The information management implements two directions of decisions that focused on current changes or strategic transformations, which in different variants can be combined with general information

and managerial links. So, when choosing a model of changes it is possible to construct their structure with the transition to strategic transformations that accordingly provides for the expansion of information sources and the formation of analytical applications with the assessment of promising events in the economic environment.

The advantage of such information flexibility is the avoidance of decision-making patterns, which creates an additional competitive advantage among other participants in market relations. An abstract model of information relations is created at orienting the business to information, development of which is now possible due to the development of technologies that provide the necessary database. The database is a set of logically bound data (or a description of these data), designed to meet the information needs of the organization.

In the complex database, information is formed through the use of analytical applications, which allow the introduction of filters at the stage of searching for the necessary messages that helps to avoid information overload, the risks of duplication of information, its distortion and misinterpretation. To form the database, there are provided integration links between management subsystems that focuses on the use of a combined approach in the processing, transmission and storage of information.

In ensuring the development of innovation in the information management namely management personnel has a key position and decisive influence, on the basis of which is implemented a set of basic principles and methods for organizing information provision of business. The technologically innovative service of the enterprise involves the use of radically new technologies, the combination of previous technologies or new knowledge.

Accordingly, in the information regulation of innovation development of the enterprise should be based on three basic parameters – strategy, time, resources. These parameters are key, because they represent a trinity of effective provision of business activity, taking into account the conditions, factors and restrictions of business in accordance with the trends of socio-economic processes development.

Within the framework of strategic planning the process of development of managerial decisions involves the assessment and diagnosis of alternative options, for revealing which in the resource maintenance of activity of the enterprise it is necessary information about possible consequences of realization of corresponding directions.

When generating alternatives to managerial decisions, information about the situation of the decision, the results of the analysis and assessment of the situation, the results of its diagnosis and the forecast of the development of the situation for various alternative variants of the possible development of events should be used to the fullest.

The architecture of information management of enterprise on the basis of these parameters makes it possible to distinguish between different combinations of factors, methods, principles and procedures for organizing the information environment (Figure 1.11).

The most effective rationalization of information management is carried out in accordance with the adopted type of information policy as an optimal model of guiding influence on information processes.

This policy is based not only on the principles, methods and procedures for processing information, and also involves the unity of technology, tools and the style of management.

Information management policy is not exclusively a theoretical construct, but includes elements of an expert management system, that is, professional competencies expressed through data for decision making. Types of information management policy are different according to the parameters of the organizational structure of the enterprise and distinctive features of development strategy.

An accepted policy is the least attractive for the innovative development of information management, since it involves a template approach to data processing. This is a typical example of focusing on traditional methods, principles and procedures to avoid innovation opportunities available through the use of analytical software applications. In this case, the subjects try to use other resources as advantages for optimal positioning in the environment without the possibility of making changes and transformations.

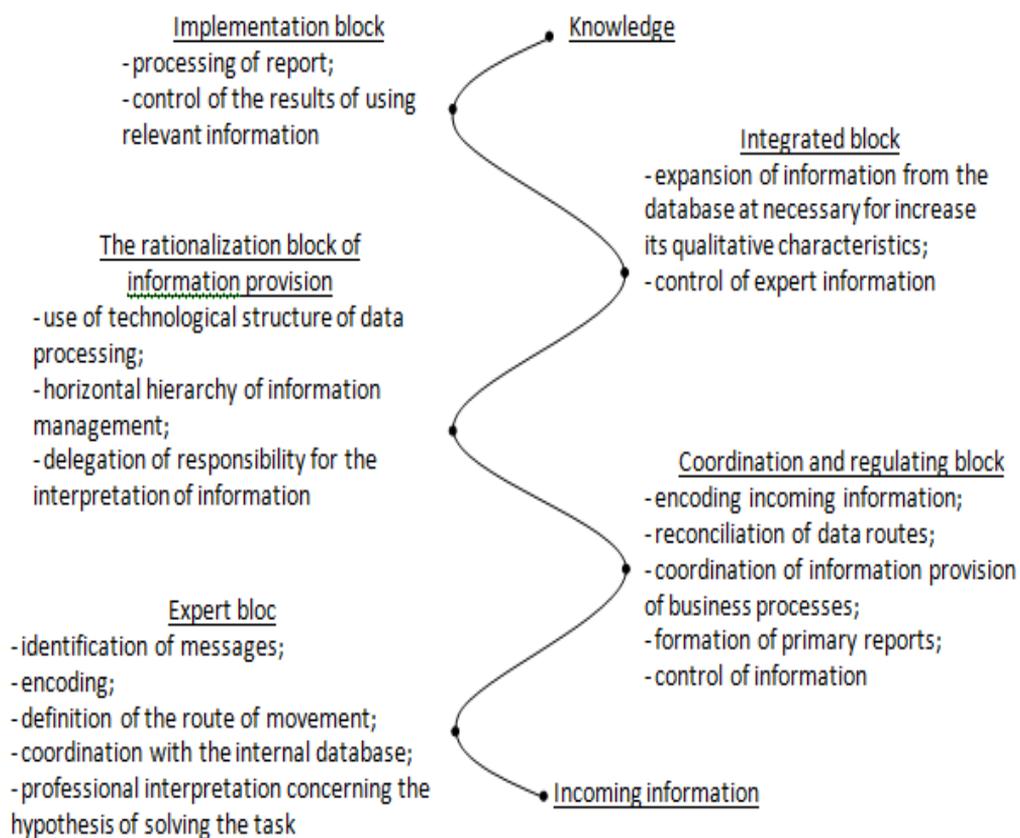


Fig. 1.11. Architectonics of information management of enterprise

The policy of simplification is characterized by a factor of moderation, that is, reconciling the parameters of the internal and external databases, which involves achieving a balance in the organization of information management, since it allows implementing various integrated structures of information structures in accordance with user requests.

The policy of simplification is effective if external sources of information are reliable with a low level of distortion of information. The effectiveness of information management in this case depends on the combination of methods, principles and procedures that ensure the formation of information without excessive time.

Personalized policy is effective for the macro level of information

management, since it is designed to regulate external data flows and creates an additional informational environment as the basis for operational decisions. Under such a policy of information management, data is formed according to priority directions of managerial tasks, which are constantly updated in accordance with the processing of new information messages. The private nature of information management consists in personalization of information processes, that is, the use of unconventional models of data interpretation with the formation of relevant information.

Coordination policy is typical for innovative enterprises that define information as a key factor in development and, on the basis of it, develop a strategy, taking into account the restrictive factors of the environment. Under such policies, an information platform is organized with the implementation of a binary approach to data processing, which allows for the formation of models of reactions with several options to quickly adapt the processes of activity to changes.

Information management is an element of the enterprise strategy, and therefore inherits its main provisions and develops as a reaction to the dynamics of a competitive environment. In the strategy implementation of the enterprise the information management provides the formation of a complex of decisions and actions aimed at achieving competitive advantages that will become the basis for the positioning of the subject of economic activity in the external economic environment.

The sequence of development of the economic environment from the industrial era to the era of knowledge focuses the entrepreneurial structures to borrowing from the activities of three basic features of the modern economic world: innovative technologies, changes and manifestations of globalization. The information management can coordinate these features and promote the mobility of key factors of production.

In the era of knowledge, information management is determined by the ability to innovate in the changing environment of the economic environment, which corresponds to the definition of new values in the dynamics of economic processes with the formation of new knowledge

as a mandatory stage for achieving sustainability of development. The response to changes allows achieve greater advantages compared with the static state of the strong features of the enterprise, and therefore, focuses on the innovative transformation of information management.

I.5. The control component of the organization of information management of enterprise

The establishment of information economy caused not only a complex of changes and transformations for the conditions of economic activity, but also established a new ideology of activity of enterprises for which an aggressive competitive environment was formed that can be compared with natural selection. In order to be competitive, need to move faster than others in the right direction.

The ambivalence (ambiguous) of modern entrepreneurial conditions is manifested in the creation favorable technical and technological environment for the activities of business entities, but the other side is the excessive dynamics of changes, consequently, the definition of new vectors of development, which should be followed and which should be adapted.

One of the main signs of the inefficiency of the enterprise activity is insufficient understanding and knowledge of the true state of affairs and living conditions in the external environment, which requires evaluation and control. To this should be preceded by an objective distinction of set and actual goals of the enterprise activity, since there may be observed asymmetry between them, since the goals are sometimes obstacles to development because of the discrepancy between the possibilities and the state of the business entity.

The enterprise loses development potential and inefficiently implements its competencies, if within a certain time there is no equilibrium between set and real goals. Provision of objective picture of the state of the internal environment with an attachment to the external environment is distinctive feature of effective control that allows identifying the problem, the causes and factors of its origin,

which are invisible at first glance, which promotes the generation of non-standard (unconventional) approaches to its solution. The exceptional importance of control, which completes the management cycle and determines the state of the solution to the problem, prompts the search for tools, methods and procedures for optimizing its formation in the management of the enterprise.

Control is an integral part of the management structure of the enterprise, which, in the conditions of the implementation of technologies and communications acquires a new organization, the main purpose of which is the responsiveness of the reaction to changes in factors of the external environment and timely adaptation of activity to the requirements and parameters of modern economic systems.

Business entities, responding to the tendencies of the formation of the information economy, have become more critical in assessing the internal environment, the architectures of its management and development potential. In particular, only 38% of enterprises assess their activities as «functionally organized» (according to a study by Deloitte company) [23].

The essence of control is revealed through a spectrum of modern ideas concerning its substantive content and theoretical and methodological aspects: monitoring and verification system; independent control function (separate stage of managerial cycle); form of feedback information; regulatory verification of compliance with normative-methodological regulation; system that consisting of different elements (input, output, interconnections); sphere of activity; control function of the authorities; method, form, process of management activity; a complex of control methods and procedures for ensuring the implementation of management decisions; function of economic interests of controlling entities [29].

Control is necessary in order to identify the opportunity to make decisions, taking into account risks, the situation of uncertainty, that is, to find an opportunity where it cannot objectively be. Effective control is to timely identify the problem and the causes of its occurrence, which allows promptly taking measures to eliminate them. It is not enough to

find the logical reasoning of the causes and the revealed problem – it is necessary to develop measures of reaction to them, thus, achieving a balance between the subjective assessment of the state and the development of the enterprise with the identification and recognition of the shortcomings of the activity.

The main purpose of control is that, based on its results, the causes of the risks and factors that led to the low efficiency of the adopted decisions and business processes. It is expedient to organize control, bypassing the «report-to-report» scheme, that is, with a priority of a larger final result that differs from traditional estimates of the facts obtained.

Lack of control leads to unpredictable consequences, since it not only provides information for analyzing the degree of implementation of the objectives and deviations from the expected results, but also serves as a prerequisite for the transition to a new management cycle [40]. Pragmatic adequacy indicates conformity of information to purpose of management that carried out on its basis, thus determining its value for a business entity [13].

The overall logic of the organization of control involves the following actions: the formulation of goals and objectives; preparation of information base; definition of the main elements; designing his model; testing and testing; assessment of the effectiveness of the functional control organization [32]. The control is inherent in an organizational structure that meets the characteristics and signs of activity of business entity.

The organizational structure of control is constructed in accordance with formal and informal regulators that define the standard for assessing its effectiveness. The organization of control involves the obligatory preliminary work on the personalization of its patterns (templates), which consists in defining the standards and tasks of control, which must be reviewed and updated in accordance with the time context of the enterprise. The next step should be to set the scale, the nature and intensity of the control, linking it to the task and the selected time frame. The assessment and measurement of events, factors and indicators involves the formation of a value for information management, the

consideration of which contributes to the implementation of the next stage of control – the development of reaction model (a set of actions to eliminate detected deviations).

Control as a function of management and implementation of influence determines the content, and its forms are means for the implementation of this function [49]. Control is not isolated, it is a functional part of the management system, interacts and interdependent from its other subsystems. The essential limitation for control is its place in the hierarchy of management subsystems, since judgments are made at the stage of control regarding past events, that is, the fact is stated without the possibility of its change. From this it can be concluded that control is transferred to the future through conclusions drawn on its basis, and decisions made.

Consequently, it is necessary to expand the control limits by developing and implementing preventive measures that are intended to timely change the fact, evaluated and analyzed in the future for decision-making. Whole is always larger than the sum of its parts, each of which implements the function to produce a productive result. A distinctive feature of the whole is its alternative according to the constituent parts. So, management can be any, changing its properties, features and characteristics as it develops its subsystems. In such interaction it is necessary to achieve loyalty between management subsystems, minimizing the asymmetry of their informational and guiding influence.

Controls can be found not only in quantitative indicators, because the target enterprises are characterized by qualitative parameters that need to be evaluated and formulated with appropriate conclusions and measures. The control should be personalized, since only own experience, professional competencies and results allow the enterprise to set up an effective system of appraisal of events, formation of conclusions and decision-making.

The timeliness of recognizing the factors and the causes of the current state of the enterprise activity contributes to the timely response to them, which is an advantage in developing scenarios of development with an objective assessment of their expected results.

The control completes the process of accounting, generalization and analysis of economic information, which at this stage is evaluated and adjusted for the formation of final conclusions and the generation of work decisions.

Control not only imports relevant information – it is an information system in which the processes of collection (with extended input), composition analysis (study of the relationship of factors and the causes of the facts), the transfer of information for decision-making.

Personalizing measures of minimize the causes of an unfavorable state and resolve identified problems is the willingness to question the current (existing) state of affairs and accept the likelihood of risks when they change.

At control, it is easier to realize associative thinking (which is a necessary condition for the effectiveness of making managerial decisions), which provides for the identification of the properties and connections between causes and factors that, at first glance, are not interconnected. Control does not provide final conclusions, but leads to the consideration of a wider range of issues related to the environment of the enterprise.

Functionally, control is implemented to optimize the information relations between groups of influence, which is characterized by a variety of requests and interests. Actual control functions differ in the following properties:

1. Timeliness – prevention of negative factors, that is, reaction efficiency (sensitivity) to probable changes in the internal and external environment, which can affect the effectiveness of business process outcomes.

2. Continuity – high level of activity monitoring of the environment of the enterprise, taking into account deviations and changes.

3. Personalization – full compliance with the characteristics and nature of the subject of management, taking into account its individuality in the economic environment.

4. Objectivity – minimization in the estimates of subjective perception of facts and events, focusing on independence and clarity of indicators.

5. Flexibility – operational response and adaptation to the circumstances and factors of the internal and external environment of the enterprise.

6. The priority of the solution, not the problem – is not enough to ascertain the facts, to formulate scenarios and alternative conclusions more effectively.

7. Automated character – the control is an information system, therefore it is important to provision continuous monitoring of quantitative and qualitative data parameters, realized through the implementation of technical and technological decisions.

The competencies of control are formed through the definition of norms and regulations determined by the internal environment, taking into account the influence of the external environment with its factors, limitations, regulators and norms. In foreign practice, for the organization of control, standards are developed that oblige and regulate the process of creating a control environment for the enterprise to improve and coordinate its management [30]. The organization of control is due to the need to streamline and develop the activities of the business entity, to extend the policy of management to all levels of management, to ensure the objectives of preserving its property [14].

The effectiveness of control contributes to the productivity of the decisions, and therefore, the exponential growth of the enterprise, which in a certain time and space contexts is achieved a favorable position (in relation to partners and competitors), which is the base point for the next stage of its life cycle. The effectiveness of the generalization and implementation of the control results is to provide analytical control data, the distribution of deviations for the reasons for their occurrence, grouping and encoding of detected violations by scale and influence on the enterprise activity, system communication deviations [43].

The control is carried out not only in the limited time that related to the fact of the acceptance of the event and its assessment, its purpose is extended to the decision-making process (Figure 1.12). The generation of alternatives of decisions is assumed, final approval of which is carried out after evaluation and control procedures.

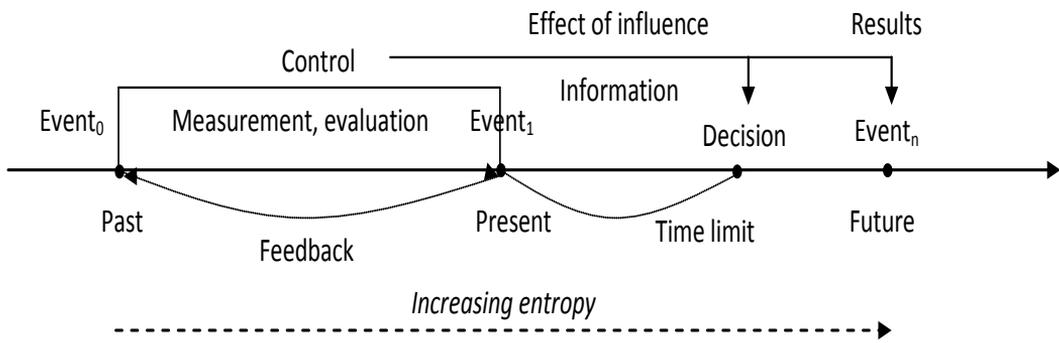


Fig. 1.12. Characteristics of control in ensuring decision-making

The enterprise is in a certain spatial and temporal context that affects its life cycle, development and acquisition of core competencies. Control is carried out when it is necessary to detect and assess the deviation between the expected and actual state of the business entity for information provision of decision-making.

Between the events that accompany the activity of the enterprise, there is a feedback through monitoring and evaluation of their causes and consequences and the development of measures, the timely implementation of which allows adjusting the expected results, matching them with the real state of activity of the business entity.

In feedbacks through control the management system receives information about the state of the controlled object, the course of implementation and the justification of the adopted decisions, which promotes the efficiency of detecting deviations for making effective changes and adjustments [8; 15].

Between past and future there is an increase in entropy (state of uncertainty) that determines the movement of time and involves constant adaptation of the enterprise to changes in the conditions of management, risks, factors of influence.

When conducting control it is necessary to take into account the dynamics of changes, organizing control in such a way as to react instantly to the transformation of the external economic environment, leading to entropy.

The control should be deduced within the timeframe, that is, it

does not focus on past assessments and measurement of the features of the current activity of the enterprise, but also to predict the factors of its future.

The effect of influence is generated as a result of perceiving the results of control, their assessment for the definition of the concept of further activity of the enterprise, which is in the range of «from negative to optimistic perception» and affects the reaction to the circumstances that have developed and which need to be adjusted. The reverse side effect of influence is inalienable subjectivity of control, which leads to the asymmetry of guideline regulation, its unjustified redundancy and, consequently, the transition to micro management.

In the organization of control, it is expedient to proceed from the full realization of its intensity (full-control) to processes that are mixed with analytics intensity, which helps to form a system capable of preventing events and timely assessing them with the export of relevant information for making managerial decisions (Figure 1.13).

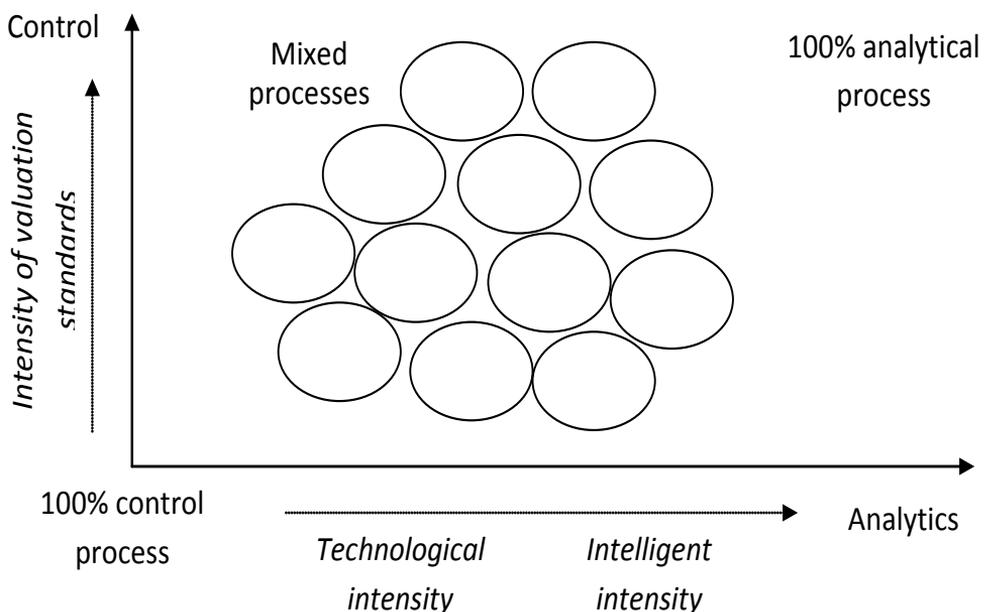


Fig. 1.13. Graphical interpretation of the mixed control process

Evaluation standards of control significantly formalize the research

of environment of the enterprise that ineffectively at necessary to deepen the hypotheses regarding the causes and consequences of the facts. The less standards are formalized, the more likely it is to eliminate (to exclude) the error of previous conclusions. The establishment of standards is effective for facts that are quantified, whereas for qualitative parameters, compositions of technologies, principles and methods of control should be developed.

Analytics is an integral set of principles of methodological, technological and organizational provision of individual and collective mental activity, which promotes effective processing of information to improve its qualitative parameters, providing knowledge acquisition, which is based on the architecture of the information base for the adoption of optimal managerial decisions [31].

The leading trend in the analytical intensity of information processing became the use of technological decisions in the close interaction of intellectual projects that contributes to the optimization of algorithms processing big amounts of data with the efficiency of obtaining relevant results. Intellectual analysis contributes to greater productivity of information, because provides for formation of personalized data processing models, immediately responding to the key questions «which?» and «why?» to process the information with clear understanding of the expected result and an assessment of its reality in the context of the enterprise activity. Intelligent analysis contributes to allocation objective dependencies (functions, factors, models, relationships) in processes that are executed through the compilation of managerial information, which is passed to the user for evaluation on the subject of relevance for the purpose of performing the tasks.

Allocation from data the knowledge about the environment of business entity is the specificity of intellectual analysis of information with distinguishing received data by subject matter, contributing to the transformation of the database into the knowledge base for convenient and prompt processing of information on the problem posed. This is the achievement of the effectiveness of the operation of semantic

constructions (components of the content of documents), which forms an integrated data set, individually organized for the purpose of enterprise management.

Through intellectual analysis abductive conclusions are formed, which are the result of analysis and objective evaluation of the obtained results (facts), on the basis of which the hypotheses are developed and substantiated for their explanation with further formation of conclusions and decision-making. This is an extension of the scope of research and observation, since the assessments are concentrated not only on the facts revealed, but also on facts that are secondary, that is, they are investigated superficially, with an attachment to priority information. Intelligent analysis leaves some uncertainty that contributes to minimization of subjectivity in the conclusions, as issues are developed that need to be further elaborated, taking into account the time contexts and the individuality of the enterprise activity.

Effective for control is the implementation of mixed processes, that is, the integration of valuation standards with analytical procedures, establishing individual patterns of their organizational structure, which contributes to the formation of various hypotheses regarding the situation that has developed as a result of the enterprise. The hypothesis begins with a problematic situation, which involves its evaluation and judgments based on various criteria and parameters of the factors.

The hybrid of control and analytical procedures contributes to overcome the polarity (plausible – probabilistic) hypothesis that most fully reveals the meaning and causes of the facts that are the result of past events and the basis for future processes.

This is an «inverted» approach, when conclusions are based not on the results of interpretation and generalization of information, since the preliminarily prepared hypothesis (which «lies on the surface») is leveled out and is the most logical, based on the elaborated information). The concretization and explanation of facts with the connection to the trends and factors of the external environment are carried out, which allows us to expand the range of assumptions, and therefore contributes to the objectivity of the conclusions.

The advantage of the «inverted» approach in control is in the new format of the interaction model with other management subsystems, which results in a departure from the traditional vertical information and guidance effect, achieving equilibrium at the decision-making stage.

The organization of control should be based on managerial architecture, since it is for decision-making that an assessment is made, standards are developed and applied. Changes are an objective development companion that is implemented in the new imitative forms of enterprise activities that need to be objectively evaluated and to which control procedures with developed qualitative characteristics should be applied.

Conclusions to section I

An important scientific and practical task of identifying the trends of innovative development of the enterprise activity, developing and presenting the latest concept of the development of new innovative decisions for the technological reorientation of the management system, the substantiation of the innovation basis for the transformation of information provision of management is resolved in the first section. A new view at development of information system of the enterprise allowed forming of a new information management policy ensuring the competitiveness of the enterprise and its sustainable development.

1. The basic provisions are defined and substantiated, on the basis of which the level of effectiveness of digital transformations on the reorientation of the management system increases. The developed principles coordinate the development strategy for the implementation of digital transformation, which allows establishing effective information relations in the enterprise management system in accordance with the new conditions of activity.

2. The attributes of enterprise information management have been characterized, which allowed developing a new formula for information provision of decision-making. It is a modernized parameter of a new information management paradigm, on the basis of which an integral system of organizational, economic and informational provision of innovative processes is formed.

3. The visualization of the architectural information management of the enterprise as a constructive model of information management with allocation of various combinations of factors, methods, principles and procedures of organization of business information environment is proposed. The information policy is characterized, which is not exclusively theoretical construction, but includes the elements of the expert management system, that is, the professional competences expressed through the data for decision making.

The types of information policy were developed in accordance with the parameters of the organizational structure of the enterprise and distinctive features of the development strategy, which made it

possible to improve the methodical approach to the organization of the information system in accordance with the requirements and factors of modern business.

4. The expansion of the range of the influence of control in information management is substantiated, emphasizing the modification of its functions and the development of competencies as a guarantor of efficiency in decision-making. Thus, the basis for changes in the control component of the information provision of management that is objective for the modernization of business in accordance with the characteristics, properties and characteristics of the information economy is laid.

SECTION 2

EFFECTIVE INNOVATIONS IN THE INITIATIVE DEVELOPMENT OF INFORMATION SYSTEMS OF BUSINESS

2.1. Innovative transformations of information and analytical management systems

Activation of changes of activities should be ensured by their synchronization with the intensity of the development of the external environment, as an objective response to the development of innovations, products and innovative decisions.

Relating to complication of economic relations that are explained by the globalization of the information society, enterprises are interested in the development of information-analytical systems of management of the new generation with the provision of composite architectonics, focusing on the software, communication and intellectual components of processing, transmission and storage of data. Today, the long-term competitive success of the company depends on its ability to create an innovative model of managing an enterprise, one of the important components of which is the information system.

Innovations, first of all, in information and analytical processes take a place key role in stimulating development and competitiveness in business. Previously, to achieve the result there was enough implementation of supporting technological decisions, but today now need much more – it is necessary to manage capabilities and potential through the implementation of radical decisions [42]. Empirical studies have shown that in radical innovations there is a much bigger potential for business success than in supporting improvement of processes and products [19]. In their development, enterprises are guided by various innovations, but do not take into account that it is impossible to determine the priority in decisions- this should be a complex process of changes.

Innovative development is an interconnected process of transformation in all structural elements of enterprise, in its economic, informational ties, organization, culture and technologies. Opportunities for implementing innovations are determined by a group of key factors (Figure 2.1).

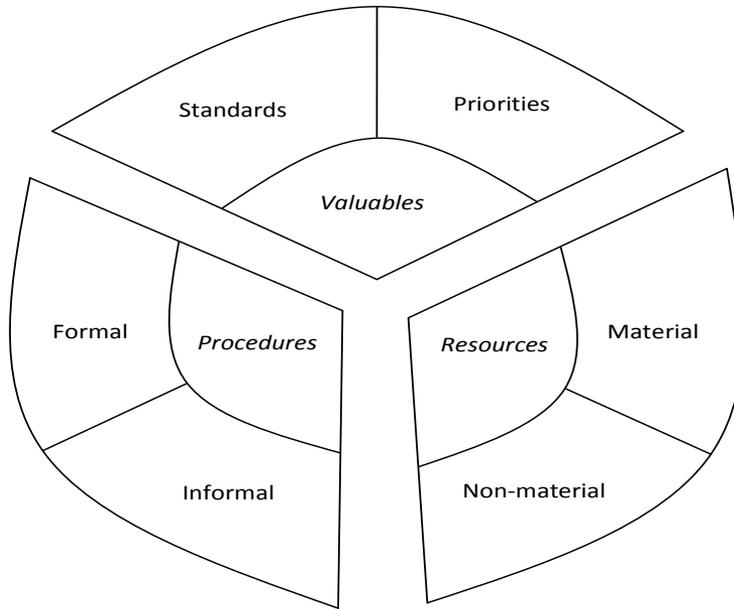


Fig. 2.1. Factors provision the realization of radical innovations

Valuables are a factor that determines the opportunities for change and development. First of all, these are the standards according to which prospects and ideas are generated. Also, these are the priorities that the company follows in accordance with the chosen direction of development.

The growth of business means the complexity of its organization structure, and therefore the task is to make responsible decisions at all levels of management systems in accordance with the development strategy and business model. The valuables of an enterprise should be the valuables of each employee, which involves targeting a single goal and agreed rules and with equal responsibility for the decisions made.

In order to provide valuables, resources that are material and non-material are required. Resources are the most flexible factor of innovations and can be combined in accordance with different development models with constant updating.

Access to big volumes of information resources increases the chances of management personnel to respond in a timely manner to any changes.

The management system takes into account precisely the

information resources when assessing the prospects and constraints of development of enterprise. Assessment of resources necessarily should be accompanied by the organization of appropriate procedures that involves the construction of an individual model of development with the transformation of source resources into a competitive advantage.

The procedure is not only an action but also methods, processes and ways of transformation of resources, market monitoring, budget planning, professional competence development, etc. In order to provide innovative development, management personnel decide on the transformation of resources, technologies, products, brand, organizational culture, information into a new cost. To transformation of information paid more attention to the organization at procedures, because the development strategy is based on managerial information.

The development of enterprise information system should begin with optimizing the model of its organization that consists of certain elements, namely the organizational code, which is unique for each business entity. Innovative transformations are effective provided that development is peculiar to each element of the organizational model and their aggregate in general.

The development of each element also includes the previous result of the change of the corresponding element and the whole model, since it is defined as recommendations for changes and transformations (Table 2.1). Management of changes involves redesigning the organization of the enterprise, implemented through the construction of integrated systems with the integration of key elements of the organizational code (see the Table 2.1).

Table 2.1

Organizational code of innovation changes in enterprise activity

<i>Code element</i>	<i>Characteristic</i>
Aggregate development	The enterprise should constantly adapt to changes and develop. It is important that development takes place in each subsystem with the updating of professional competencies

<i>Code element</i>	<i>Characteristic</i>
Personalized development	The development of organizational code is primarily provided by the employees of the enterprise. Therefore, it is necessary to provide training and professional development as an incentive for introducing innovations at the micro level
Complex system of motivation	Organizational changes are related to the motivation of employees that includes not so much a material incentive, but an interest in the development of the enterprise
Partnership	Innovative combination of resources, valuables, procedures, professional competencies. This is a complex structure of innovation provision of changes that is mainly realized by updating knowledge, skills and abilities
Implementation of innovative technologies	The basis for changing the organizational code of the enterprise is precisely the innovative technologies that apply not only to information processes but also to all processes of enterprise activity and management systems. Innovative technologies determine the level of competitiveness of the enterprise, since they allow timely adaptation to the requirements of the environment
Transformation, architectonic of activity	Reengineering information, managerial and business processes of the enterprise. This is a complex work on updating the architectonics of organizational code of the enterprise taking into account new links between management levels
Forecast of the real needs of change	The focus is on innovations that inherent in the development of society and the economy. Timely response to new factors of socio-economic transformation with the adaptation of activity to them
Information infrastructure development	Information infrastructure ensures the existence and development of organizational code, therefore the transformation of information processes is a necessary measure for improving the efficiency of the enterprise
Update the business model	In the modern economy, to the business development is not sufficiently limited to the formation of innovative products, but it is necessary to generate new rules of business that are implemented in an innovative business model
Definition of development criteria	The evaluation of the results of the activity involves the presence of criteria, according to which the prospects or limited of development of the enterprise is determined. The development of criteria allows to formulate an individual development formula
Determine the direction of development	Determination of the meaning, needs and prospects of existence of the enterprise as a competitive business entity. The formation of a goal should be a process of combining incentives, resources, procedures and directions of change

<i>Code element</i>	<i>Characteristic</i>
Support of changes	Development is achieved through the adoption of changes as a necessary step that involves rethinking the enterprise activity concerning the prospects and limitations of its modernization in a modern economy

The basis of the construct of information, organizational, managerial and business processes of the enterprise is restructuring as a procedure for increasing the efficiency of activities with increasing the level of competitive strength of business entity.

Structural adjustment is a complex mechanism of change, which features the features of radical innovative solutions, in which transformations are realized in the valuables of the enterprise, the integration of information and technological infrastructure with the redesigning of business processes. For such a system is inherent in a unique nature, since the enterprise alone makes decisions concerning the organizational basis of business with the modeling of management system (Figure 2.2).

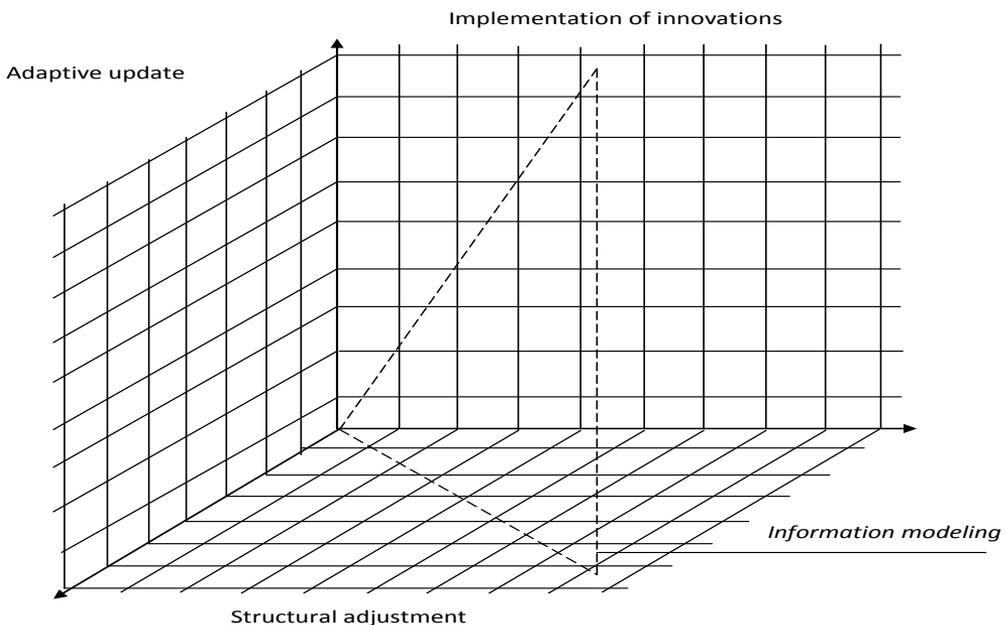


Fig. 2.2. Model of constructions of elements of organizational code of the enterprise

Innovative development is achieved not only by the restructuring of processes but also by establishing a new level of interaction with the external economic environment, because the changes are primarily inherent in the macro level, which should respond to the micro level. Adaptive update is an inevitable process of change as a response to economic signals that configures the business to identify new development priorities with corresponding transformations in the organizational code of the enterprise.

Implementation of innovations is carried out primarily through training, since most changes imply the availability of certain professional competencies. Management personnel need not only to define a new direction of development, to choose methods and tools for its achievement, as well as to form a system of incentives. The implementation of innovation is a complex process, but with great potential, which is the sustainability of development.

Information modeling can be called derived element integration of restructuring, adaptive update and implementation of innovations, because it is on the basis of the formation of information models that changes the traditional methods, principles and procedures with the transformation of the outdated business model. Exactly the information modeling allows seeing the prospects and really evaluating resources, risks, opportunities and constraints. On the basis of information modeling, resources are mobilized, a system of goals is formed, and constructions of managerial decisions are generated.

In general, a coherent structural restructuring of the organizational code of the enterprise is implemented on the basis of complex changes with their management in accordance with innovative decisions. An indispensable tool for managing change is the design of the organization's models, the most effective of which is the 7S model, which allows you to diagnose the organizational system of the enterprise, plan changes in its processes, contributes to raising the level of professional competencies.

Model 7S consists of seven independent variables: structure – a means of division of labor and levels of management; strategy – means

to maintain competitive advantage; systems – procedures performed daily by employees; shared valuables – fixed valuables shared by employees and are the basis of corporate culture; skills – competencies of the organization, factual abilities of employees; style – style management developed by management; staff – employees of the organization [38].

The main idea of constructing the 7S model is that effective decisions depend on the human factor, namely the ability of professionals to implement professional competencies in accordance with the valuables of the enterprise, its strategy and direction of development. The human factor is also a priority in research on change management, which is about what an efficient organization should be, able to maintain competitive stability in a dynamically changing environment [3]. The main idea of constructing a change management model is the triune of key developmental tasks: understanding the real situation, forming expectations, developing the necessary measures. Schematically, change management can be described through three blocks of processes that are inherent in different levels of impact (Figure 2.3).

Managing changes in accordance with the hierarchical model (see Figure 2.3) allows fulfill two key development objectives – not only to make decisions, but also to provision its effective implementation. The model takes into account contradictions in the interests of the development of the internal and external environment, as a result of which it is necessary to provision of partnership and plan development with the interests of not only business, but also economy and society.

Accent of target changes is to shift from the real state of affairs to real action, which ensures the transformation of expectations into result. Such transition is possible if there is an appropriate information support of change that involves the continuity of modernization of the information-analytical system of the enterprise based on innovative decisions and technologies.

The structure of integrated information and analytical management systems is characterized by multilevel information communications and relations between management subsystems (at the micro level) and business entities (at the macro level).

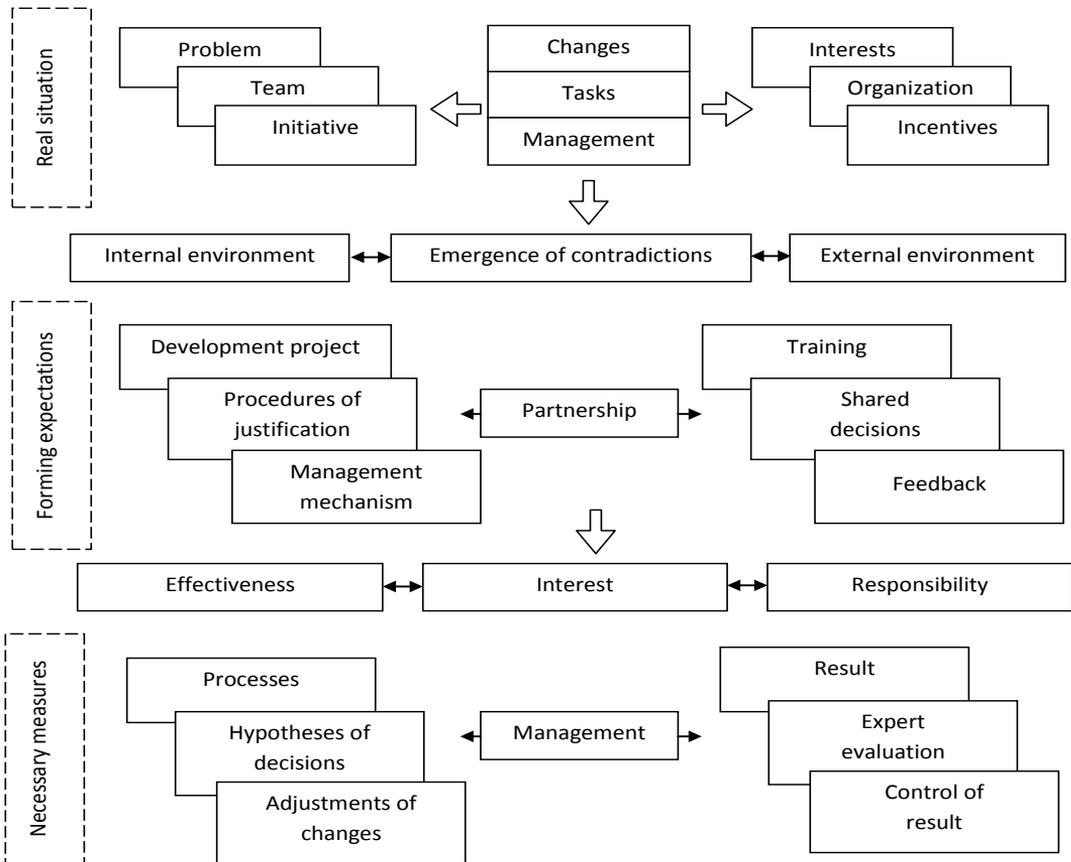


Fig. 2.3. Hierarchical change management model

Increasing the efficiency of systems is a prerequisite for the achievement of synchronized development of the enterprise and reducing the risks and the state of uncertainty in its operation, since timely and complete information and analytical provision of management enables the formation of a model for responding to changing of conditions of management.

In the conditions of technological determinism, the intellectual and technological development of information and analytical management systems that can become an alternative to information systems inherited with the traditions of monovariate generation of data for decision making is especially in demand.

This is the announcement of transition to a new level of management of information processes, communication relations, self-diagnosis

of databases with an increase in the level of efficiency, provision and evaluation of which requires additional development of organizational and methodological nature.

The essence of the modern information and analytical system goes beyond the traditional understanding of the processes of processing, transmission and storage of data and is determined by the intricate structures of information relationships with the basis of rational and irrational interpretation of information for its further transmission in order to form knowledge and make managerial decisions. Information-analytical management system is interdependent, integrated set of components of organizational, legal, informational, methodical, programmatic and technical character, providing the necessary quality of the accepted managerial decisions at the expense of rational use of information resources and technologies. Information-analytical system as a set of information (information base) is determined concerning the level of provision of managing economic processes by data from the database.

This is an environment, which is formed and developed on the basis of cooperation processes and activation of communication communications, contributing to the openness of the system for the search and transfer of information. Decision-making consists of ambivalent processes with different time contexts and information provision. Operating decisions are mostly made on the basis of a priori and a posteriori knowledge with automatically evaluating the situation and the task that should be solved.

The operational decisions are characterized by the monovariability of information provision, since their adoption is limited by one hypothesis without the need for alternative conclusions. Future decisions have a longer time context for generating, because they depend on the variability of hypotheses and patterns of response to the situation that has developed and to take place in accordance with the development plan. The information provision of such decisions tends to the level of absolute knowledge (all possible information available from internal and external sources) that provides for the generation and use of new information.

The new information (for which the message is created) is information that, in the opinion of its author, is capable of making changes to the structure of social and individual thesauri (amount of knowledge). The new information updates the managerial decision in accordance with the spatial and temporal context, which affects the activity of the enterprise within the framework of the chosen strategy of development and substantiation of the motivation of the activity.

Sufficiency of information is a basic indicator of the effectiveness of making a managerial decision with the establishment of an optimal minimum of information as a psychological criterion for selecting data necessary for a specialist to optimally solve a task. In order to determine the amount of necessary information, it is necessary to elaborate in detail the defined managerial task for the term of its implementation, the expected results and unconditional risks that must be taken into account in the formation of decisions.

The risks need to be evaluated thought out, based on the results that will be obtained from their direct impact. Absolutely negative risk assessment is erroneous, since the benefit can be gained with reasonable managing of risks.

The adoption of a risky solution should be accompanied by a duplicated decision as a backup option. Avoiding risks is not possible, therefore their advance adoption and management is more effective. It is necessary to take into account the specific features of managerial tasks, such as the property of creativity, the contradictory conditions of formulation and execution, the absence of templates and sample solutions, limited time contexts, personalization, focus on solving the projected hypothesis.

Proceeding from the hypothesis, the decision-making process is carried out on a qualitatively new level, proposing the logic of choosing an approach that is capable of adequately describing the decision-making in a particular situation. Information provision of implementation of managerial tasks should involve preliminary structuring, that is allocation of basic and auxiliary parts.

This allows for the development of a sufficient number of

decisions, which increases the level of objectivity of the decision. The next step should be to establish a relationship between data, which helps to identify the linkages between processes and phenomena in the enterprise and its existence in the external environment. The main appointment of information is the creation of a system of interconnected and complementary indicators, which allow obtaining a comprehensive quantitative and qualitative characteristic.

The professionalism of the decision is not so much in solving a specific task, but in the generation of proposals for the comprehensive development of the enterprise. From this perspective, information should not only facilitate the decision of the task, but also prove the reality of the decision and its effectiveness.

At this stage, it is necessary to establish feedback of the information-analytical system, that is, to provide not only internal monitoring, but also carry out external diagnostics of the enterprise.

In the process of interaction of the organization with the external environment, strategic management is primarily concerned with how the enterprise should behave in the long run, in order to ensure, in conditions of competitive interaction with others, that they seek to maintain balance in exchange with the environment, and, therefore, to ensure sustainable development.

Modern technological and intelligent decisions allow enterprises to have detailed information and form a multifunctional database with an information output that allows coordinating information flows and automatically updating data by involving large data systems that constitute a promising information resource for generating managerial knowledge.

The database should be updated with information about the state of the enterprise environment from external sources that contributes to the greater constructiveness of the hypotheses, their reality, the link to the conditions and trends of the environment.

It is important to take into account external evaluations, because it is additional knowledge that is different from the impartiality of the enterprise environment, its relations with the groups of influence and the

developed image. The scope of information requests of an enterprise cannot be limited to information that reflects its material condition, but takes into account reputational benefits, business prototype of the business entity, the value of its intangible assets.

Such information is now a priority for objectivity in decision-making, since it allows diagnosing an enterprise for its prospects of development and stability of a competitive position in the external environment.

The basis of decisions is no less important from the knowledge base, since it contains decision templates that reflect previous experience in solving managerial tasks. The uniqueness of each hypothesis, every managerial decision is unquestionable, but experts in the development of proposals are guided by professional judgment, and therefore acquired experience, a posteriori knowledge.

To save time and money on solving a given task it is enough to evaluate the problem situation, compare it with situations that were solved earlier, find a common denominator, to determine the template suitable for developing a new decision.

In order to use the template, it is necessary to carry out continuous monitoring of the external environment, to track changes, new conditions and requirements, to study user queries and competitors offer, to explore technological innovations and scientific and intellectual products. There are three types base of decisions:

1) Expert – the decision base contains templates that solve tasks related to the strategic development of the enterprise and are based primarily on professional judgment and expert judgment.

2) Universal – the templates have a multi-variational character and can be used for different hypotheses and tasks. Such templates are quite flexible, which allows them to fit into a situation that has developed.

3) Carefully considered – templates are designed to solve managerial tasks with limited resources and time, implementing their most rational distribution.

The use of templates is justifiable for operational decisions and, if necessary, should be used to save funds to the development of new

projects and development scenarios. Each template should be refined, based on the realities of the time and space of the enterprise, and take into account the planned development indicators, which are an error for the template, and therefore an additional group of risk of loss of development opportunities.

Decisions templates – this is one of the elements of a general information and analytical system of the enterprise, whose effectiveness should be ensured by the necessary processes and actions, among which the most productive we can call self-development, that is, system work with complex factors that determine the effectiveness of information processes, communications and decisions.

The self-development of the information-analytical system is not a concept, which is identity to holocracy (the innovative management concept, according to which the vertical corporate structure is replaced by a system with self-management). It is the maintenance of actualization of system, its adaptation to changes, flexible, based on the development of the supersystem and subsystem of the information environment of the enterprise (Figure 2.4).

In self-development, the supersystem and subsystem are mutually coherent and interdependent, having an equal managerial impact on the system, defining the vector of its development. Self-development of the information-analytical system as a process is a component of external and internal diagnostics, which in aggregate is the starting point for making decisions in the context of actualization of the information environment of the enterprise.

Self-development of the information-analytical system of the enterprise is the result of intellectual and technological reorientation of processes of processing, transmission and storage of information.

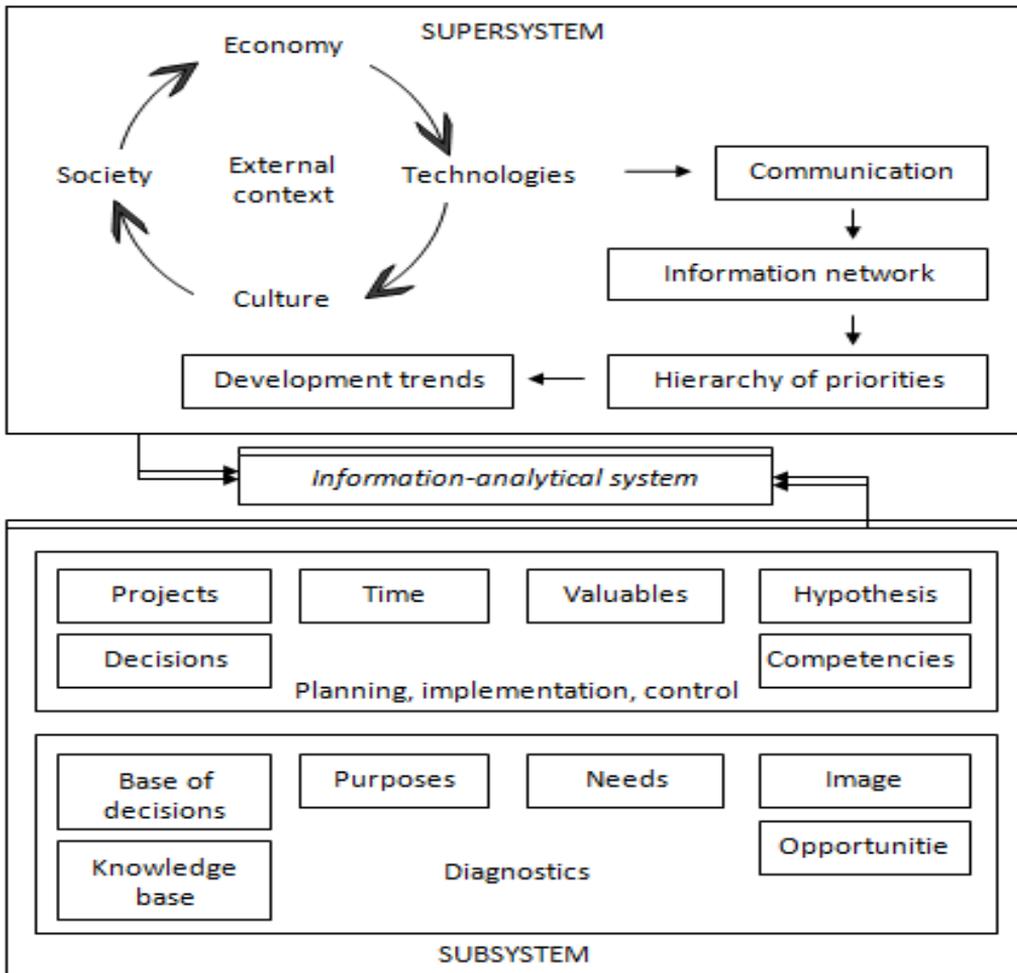


Fig. 2.4. Model of self-development of the information-analytical system of the enterprise

Each element of the model is characterized by factors that determine the direction and essence of self-development of the information-analytical system of the enterprise (Table 2.2). This is a characteristic of the qualitative development of the system, which can be considered in terms of purpose and instrument.

Development as a goal involves the creation of new knowledge, methods and approaches focused on updating the information-analytical system, based on transformational changes in the external environment and its response to the implementation of changes in the enterprise activity.

Table 2.2

Factors of self-development of information-analytical system of the enterprise

<i>Factor</i>	<i>Characteristic</i>	<i>Impact on system development</i>
External context	Groups of external impact that define the basic provisions and regulators for the formation and development of information systems	Installing real landmarks development and constraints that inherent in the time and spatial context of the enterprise
Communication	Adjusted information exchange and information link with external groups of impact	Receiving timely information about trends and changes, possession of information about the essence of the trends of the modern world
Information network	System of information impacts with ramified databases	Increasing the level of analytical capabilities of the system concerning to attract various databases
Hierarchy of priorities	A group of priorities of external environment in accordance with the requirements and trends of time	Adjustment of the information-analytical system to actualization in accordance with changes in the priorities of the enterprise
		The immediacy of the reaction to the new needs of the enterprise, due to changes in the external environment
Development trends	Technological innovations, scientific and intellectual resources, which are an active dominant in the development of processing, transmission and storage of information	The analysis of trends allows choosing technologies and intellectual resources, based on the peculiarities of the information-analytical system of the enterprise
Diagnostics	Set of features, properties, characteristics, risks, potential, limitations of the development of information and analytical system	Formation of a plan for actualization and development of the information-analytical system, based on its objective capabilities and constraints

<i>Factor</i>	<i>Characteristic</i>	<i>Impact on system development</i>
Planning, implementation, control	Means and goals of development of the information-analytical system	Development of practical actions concerning development of information and analytical system with the implementation of a set of control measures and monitoring their effectiveness

As a tool the development implies the promoting the output of the information-analytical system to a new level of knowledge generation for management. Self-development is a group of effective measures to avoid automatic information management, when future risks and uncertainty are offset, and knowledge formation is carried out by the results of events and for solving emerging problem situations.

2.2. Innovative foundation for the transformation of modern business

Changing business development benchmarks has become the basis for the transformation of functional management with the definition of the priority of long-term planning, provided by a set of relevant information. Today, the approach to information management, which is considered not as an element of strategic planning, but as a separate concept of management activity of the enterprise, has changed considerably.

Traditionally, entrepreneurial structures use the strategic pyramid of business development with the implementation of a complex of organizational and technological changes that involves the creation of innovations (Figure 2.5).

Under the conditions of dynamic changes in the economy and society, the traditional approach to the formation of an innovation strategy is ineffective, since most factors, prospects, risks and conditions of development are unpredictable for defining a strategy.

The traditional development approach (see Figure 2.5) is more

suitable for a business that develops in stable and predictable economic conditions, that is, in a non-existing environment today.

Innovative development model should be formed taking into account the basic factors of innovation transformations: strategic intentions, management challenges, balance of possibilities and constraints.

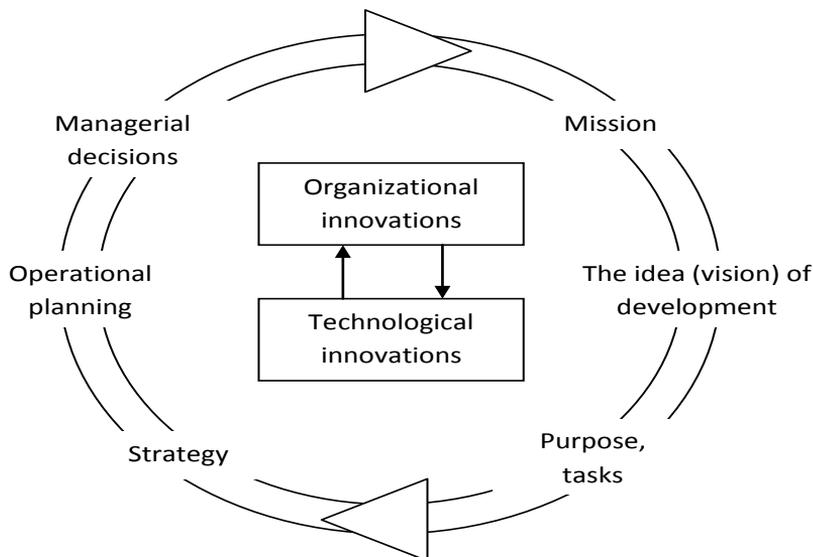


Fig. 2.5. The traditional cycle of innovative business development

A characteristic feature of such a model is a fundamental change in the essence of the strategy – not the elimination of errors due to the assessment of past events, and the prospects of change and innovation. Strategic intentions are inherent in every business, but by the rare exception, management personnel correctly estimate this factor of innovation development.

Strategic intentions are formed as a vision and an incentive for development, and therefore provide for the implementation of specific actions that change in accordance with the requirements of real-time. Strategic intentions are a starting point for transformations, which involves the formation of a specific configuration of general changes with a multivariate combination of development hypotheses.

No less important factor of change is the challenges of

management or the purpose and tasks that are formed to implement the idea of long-term business development. Management personnel should evaluate opportunities before forming challenges, because this allows developing a real action plan without conflicts of interest and management asymmetry.

Thus, if in the traditional approach, the intentions, challenges and perspectives are formed in the form of a model, then in the innovation model, these factors are combined in one plane without determining the priority of one factor or another. In such a model, a strategic process with the integration of strategic thinking, comprehensive decision-making system, and a mechanism for reacting to change is implemented.

It allows establishing effective interaction between the key subjects of management and promotes the increase of qualitative parameters of managerial decisions. Agreed management allows forming an initiative model of changes (Figure 2.6), which are effective for enterprises with an adaptive type of strategy development, since it provides flexibility and speed of reaction to external transformations and the formation of effective structures of action.

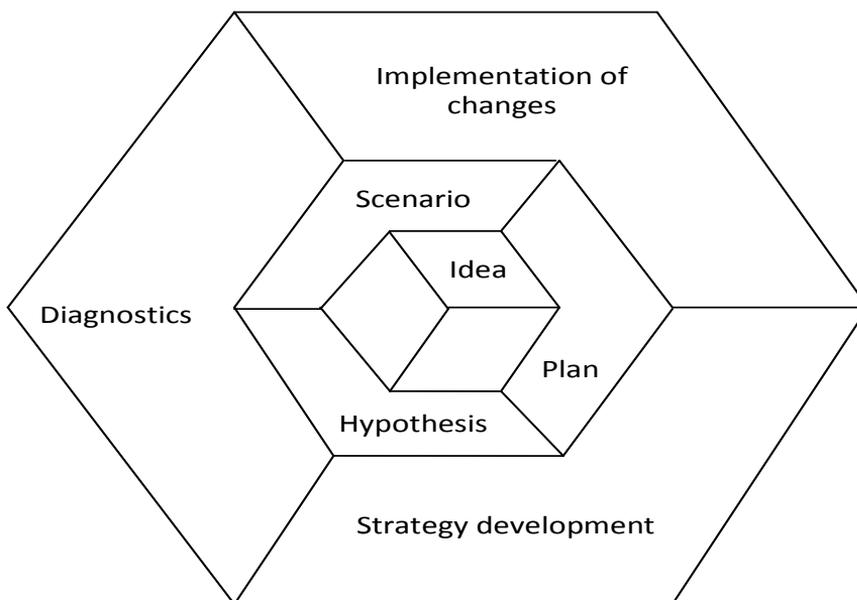


Fig. 2.6. The initiative model of changes of adaptive enterprises

An initiative model of enterprise changes is used to assess the prospects of possible strategies, which allows you not to waste time developing an action plan that will not be implemented due to its inefficiency in the future. The initiative model is more reliable for adaptive enterprises, since it allows management personnel to respond to external factors in a timely manner and conduct managerial experiments with minimal risk for development.

Each element of the model can be used separately as management module (if necessary) or as complex system. Diagnostics allows developing a plan for the process of changes, monitor strategic factors, evaluate opportunities and, as a consequence, mobilize changes.

At the stage of strategy development, a decision is made on the appropriateness of the transformation of the organizational business model, the scenario is developed as a detailed action plan and the first imitation changes are made [34]. Implementation of changes is carried out simultaneously with the assessment of strategic initiatives and laying the foundation for the processes of the enterprise.

Exactly imitation allows using the model to predict the development of events, and therefore, to formulate a strategy as an experiment with advance expected result. Also, in order to be ahead of change, it is necessary to manage the factors and constraints at each stage of transformation (Table 2.3).

Each innovation policy has its advantages and disadvantages for business, therefore, the enterprise chooses the general rules of adaptation to the organizational model of activity, strategy and development tools (Figure 2.7).

Gradational innovation is used by companies, which plan preserves the competitive positions due to superficial changes. Gradational innovation cannot be unequivocally identified as ineffective, since it allows successful companies to regulate their activity through necessary adjustments and preventive measures. Development policy can be constructed from operational change plans, which do not require radical improvements.

Table 2.3

Stages of the process of changing adaptive enterprises

<i>No</i>	<i>Stage of the process of changes</i>	<i>Description of the stage</i>
1	Understanding the need for changes	<p>The process of change requires understanding and acceptance as an effective development tool. Changes should be initiated with a substantiation of their prospects that involves preliminary study of the external environment, monitoring the state of development of key competitors and identifying «weaknesses» in own activity.</p> <p>It's explanation of the futility of an attempt to maintain competitive stability through the application of an earlier effective strategy.</p> <p>The initiation of changes is explained by a realistic assessment of the risks inherent in business in the event of a rejection of the transformation and modernization of activity</p>
2	Formation of working group of innovators	<p>Selection of employees that responsible for reforming of activity. It is an assessment of their professional competencies and the ability to work together at developing and implementing a change strategy. This is the most important step since changes can be effective by their professional management by avoiding conflicts of interest</p>
3	Definition of development perspectives and the strategy development	<p>Key place in the definition of prospects is a strategy of transformations, which should be simple, understandable, flexible and consistent with the concept of the enterprise.</p> <p>It is precisely at this stage that the accounting reports are considered in detail and the amount of information needed to formulate a development strategy is determined</p>
4	Identification of means to promote changes	<p>Development of a reference model for the implementation of changes with the coordination of its main parameters with the responsible persons at the management subsystems.</p> <p>Each management unit has its own specificity, and consequently, needs an individual approach, therefore, it is foreseen to use different instruments in accordance with the explanations of management personnel</p>

<i>No</i>	<i>Stage of the process of changes</i>	<i>Description of the stage</i>
5	Creating conditions for changes	It is necessary to identify and remove obstacles to change and to replace obsolete systems and structures that are not in line with the new development policy
6	Timeliness of obtaining the result	The priority of a fast result through the implementation of elements of the overall strategy. Immediate change of activities is not possible, so management personnel should determine the order of transformation with prediction of cumulative effect
7	Evaluation of received results and deepening changes	Operative changes make it possible to timely assess their prospects. If the result is in line with the expectations, it is advisable to move to the stage of consolidation of changes and deepening of reforms through new projects and programs
8	Converting results of changes to the process of development	Improvements of activities to meet developmental needs, increase productivity, improve management style and management efficiency. Clarification of the relationship of a new style of work and organizational success. Developing ways to improve leadership and its continuity

However, gradational innovation should be a preventive tool for change for an enterprise rather than a development strategy. It is mandatory to determine the period of application of such a policy with the choice of the following type for the transition to a higher level of change.

The policy of moderate innovation is more intense and allows reforming the organizational environment of the enterprise with a significant change in the business model, information and management processes.

In accordance with the policy of moderate innovation, changes are characteristic of all business planes without the allocation of a separate link, which allows deepening the transformation and providing a mutual influence between control subsystems. Such policy applies to the organizational and technological architectonics of the company.

Moderate innovation in a business model or in technological transformation always requires certain changes in another element – changes in one element are much more important and more important

to success innovation than changes in another element. In particular, redesigning a business model contributes to changes in technological processes and vice versa.

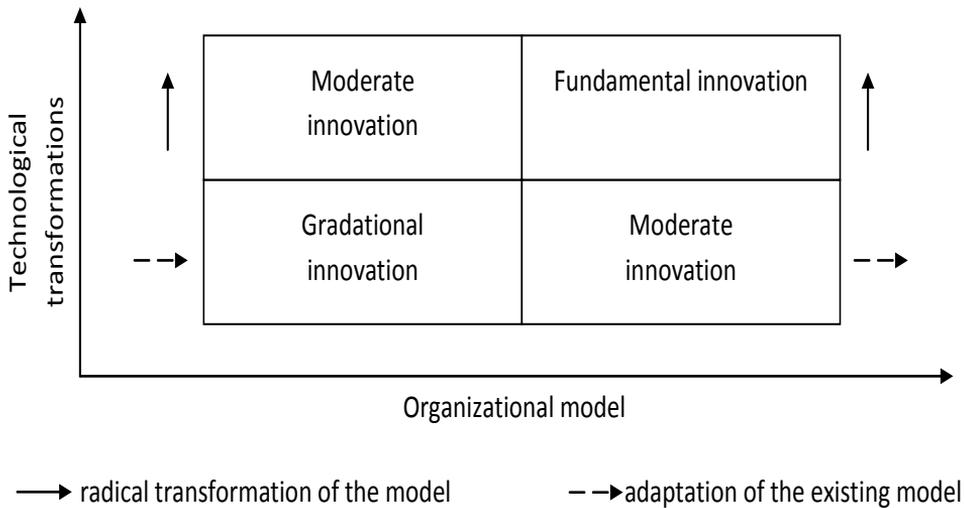


Fig. 2.7. Structural model of innovation transformations

Thus, moderate innovations allow avoiding asymmetry, since they cover different levels and mechanisms of enterprise activity with the provision of innovation dynamics and the disclosure of development potential without prioritizing and ignoring the unsightly at first sight of business areas. The fundamental innovation involves radical changes that significantly affect all aspects of the enterprise without exception. These are fundamental transformations that affect not only the micro level, but also affect the macro level of economic development.

A fundamental innovation is possible if to achieve a balance between incentive actions of the enterprise and restrictions on the implementation of changes.

It is possible to support radical innovation by: expanding cooperation with industry leaders in the field of innovative transformations; the transformation of personnel planning in relation to the formation of professional competences that are capable of supporting change, form new ideas and actualize the strategy.

The limitation of the development and implementation of radical

innovations is through: focusing on projects, in which the main goal is to avoid risk; development of ideas that are not consistent with all management subsystems, and therefore not adopted for implementation; use of projects implemented in the activities of competitors. Fundamental innovation should be a well-established step with the gradual preparation of the enterprise for changes that require a waste of policy with the transformation of personnel, technological, organizational, information provision. The choice and integration of priorities for the transformation of activity, as well as the establishment of a balance between the three types of innovation policy – gradational, moderate, radical innovation – is an element of the development strategy, the development of which is associated with the promotion of innovation.

Each innovation policy can be effective or ineffective – it depends on the policy of the enterprise’s management regarding the readiness for business restructuring in accordance with the new development strategy. Before designing and implementing an effective innovation approach in practice, it is necessary to accept innovation as a systematic process of change that gives benefits without trying to completely avoid risks, and not as a form of follow-up to trends in the development of the external economic environment.

The process of developing an innovation policy should include the identification of opportunities and the allocation of the most important ones, with the forming new concept of activity that is coherent and understood by all employees of the enterprise. Innovations cannot be uncertain and incidental – they should be thought out actions as an algorithm of changes (Figure 2.8).

In providing the strategy of innovation changes, information systems and databases occupy the main place, since this information is of key importance for the real assessment of opportunities, constraints and risks, the determination of their balance in the development of the project to enhance the activity of the enterprise.

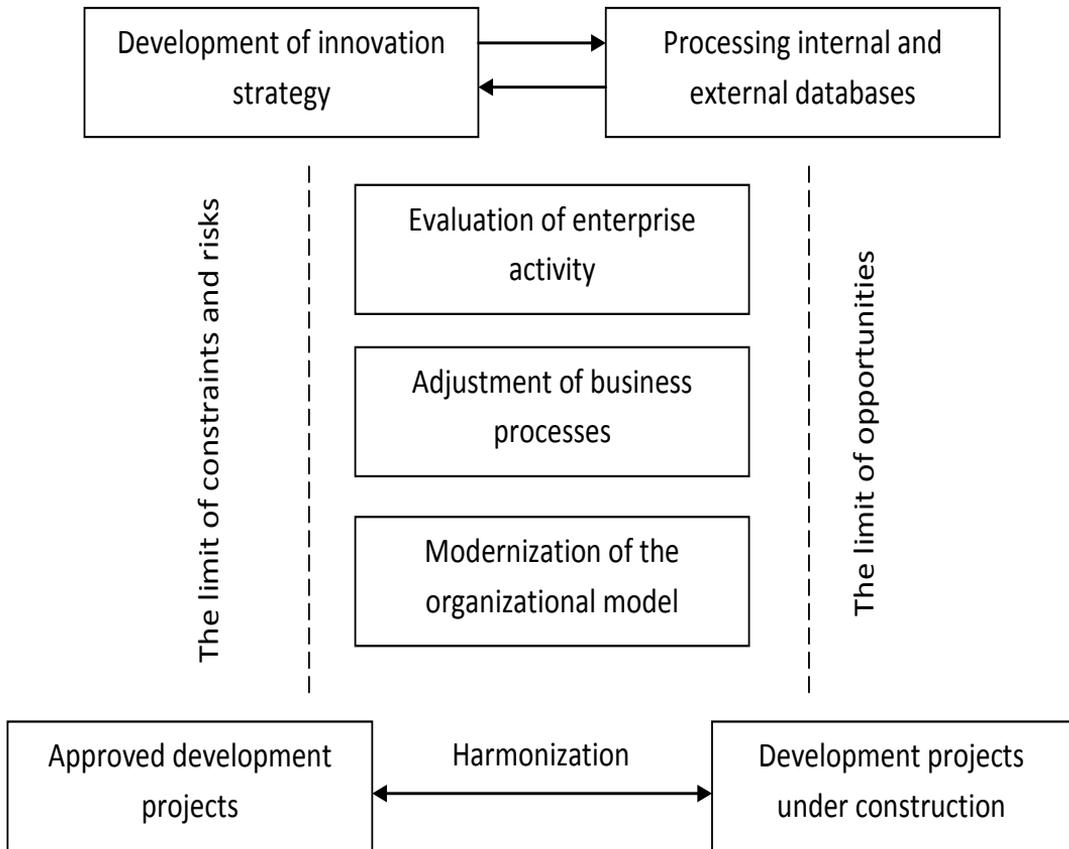


Fig. 2.8. Strategy of innovation changes that focused on sustainable business development

To information systems are put forward higher requirements that implies processing of different types of dynamic data with different levels of structuring. Big Data Systems are new solution for organizing socio-economic relations with the development of professional competencies as a basis for optimization of modern information and analytical provision of managing. Big Data as an expanded analytical application of global information environment is widely used for processing large amounts of information [35].

Technological modification of forming information provision of managing is carried out individually for each enterprise with considering the permissible amounts of new information from various sources that not limited to information, which is obtained during ordinary activities. Advisability of predominance in the information environment of new

information as a form of reflection business process of enterprise and results of its relations with external environment is substantiated to management systems.

Big Data is valuable research information which is inherent novelty and its implementation in information process contributes to formulation of right conclusions for activation of enterprise activity and to strengthen its competitive positions. Big Data is new generation of information in planetary scale of its processing, transmission and storage.

Various technological and communication projects that contributed to increasing level of information quality, its productivity and efficiency of processing, transmission and storage of data are suggested for modern stage of business development. Necessity of timeliness forming relevant information is caused by speed that accompanies business, economy, technology and society. This all is significantly different from traditions of the past, when balance and reasonableness were a trend, and time is not considered as economic development factor.

Technological and communication servicing of information contributes to effectiveness of using Big Data. Data are «Big» not only concerning number, but also according to their variety, transfer rate and complexity. The advantages in external economic environment are inherent to companies, which earlier than other will have technologies for processing, analysis and transmission of Big Data [18].

Big Data is a group of methods and means to data processing with different structuring that are used for increasing substantiation of managing decisions. It's an efficient alternative to traditional database management systems with increasing effectiveness and speed processing of data. Data analysis technologies are developed rapid pace with swift accumulation of information. If a few years ago the segmentation of customers into groups was carried out according to similar preferences, today is possible build a model for each customer in real time and in accordance with his interests of makes concrete proposals [1]. Organizing information with using Big Data System is carried out for increase its performance, analyticity and significant time reduction without loss of quality indicators [11].

In summary, Big Data technology is analytics direction that involves statistic, data analysis, gain knowledge and prediction of events [20]. This concept was developed at the time of no computer data processing, because it's allowed to expand the boundaries of planning through global external information environment.

Using of Big Data contributes to increasing analyticity of information through its segmentation that stimulates development of different scenarios of managing decisions and increases opportunity to consider and evaluate alternative of development enterprise activity. Multivariate and flexibility of scenarios business processes contribute to quality of activities and, therefore, increase efficiency of management decisions and development projects. Future development of economy depends on Big Data and today due to developed information and communication technologies there are no problems with their search, processing, transmission and storage.

Concept of Big Data is to not in processing large amounts of information from different databases and in analytical work with regulated information systems that are coordinated by based on pre-designed mechanisms of processing, transmission and storage of data. This concept is ineffective at unorganized information base, in which cannot be traced integration and achieve balance between intellectual and technological decisions in processing, transmission and storage information.

Established internal processes, a weak point of which is slow at reaction to new decisions and excessive caution in changes within the enterprise have to evolve. Concept of Big Data has identified new direction developing technologies of analytical applications, particularly two traditional classes of corporate applications – Business Intelligence (BI) and Enterprise Information Integration (EAI) of Big Data; associated with transformation of data from different sources, and therefore with the means Extraction, Transformation, Loading (ETL), Data Cleansing or Master Data Management with coordination in system the integration components [28]. Management function by Big Data is important to develop for modern business, because it allows you to effectively predict activity and minimize risks.

Functionality of modern information system are implemented not only through information function but also are expressed by communication function that provides integrated process of importing, processing, synthesis, evaluation and data transmission by request of different users. Intelligent side of communication involves the implementation of collective work during the generation «cumulative knowledge» that available for transfer and exchange.

Information boundaries of information provision of managing are considerably expanded and optimized through introduction of innovative technologies that became the basis of structural changes in accounting process. Changes have affected not only methodological basis, and also technical part that connected with servicing information and its transformation in accounting and analytical resource for using in decision making process at all levels enterprise activity. Developing information and communication technologies contributed to these changes.

Technologies servicing of managing information have to carry out functionality of automated enterprise information environment. Implementation strategy of project managing information system should be considered at organizing information process to provision of effectiveness forming automated information process.

Simultaneous strategy – parallel functioning of enterprise system and managing information system with relevant decisions. Managers choose this strategy in case if fully integrated system is functioning, but computerized mechanism of forming accounting database that is needed for analysis, planning, control and activation enterprise activity is underdeveloped. Concurrent using systems occur in short time, after which the system is fully transformed according to software decision of management system of ERP class (Enterprise Resource Planning).

Strategy of substitution – transformational replacement of functioning system on new management information system and its adjustment in the process of enterprise activity. Using new software decision is associated with high risk, because adaptation of system to needs of the database organizing implies a high level of information provision of managing.

Strategy of element – gradual adaptation of system through partial using management information system to individual processes with simultaneous analyzing efficiency of formation of information database. Such strategy may be assessed as most safe because it allows reducing risk of inefficient servicing of system.

Choosing strategy implementation of management information system is affects on organizing information provision of managing an enterprise, because software algorithms have to be synchronized to improving efficiency of processing, transmission and storage of information. Information system can be expanded by data that are necessary for servicing primary information concerning enterprise activity according to its individual characteristics. Data are not limited to accumulated information from documents, registers and forms of financial reporting.

Rationality of information provision at generating new knowledge should include complete group of relevant data necessary for development of professional judgment, based on which decisions are made.

Deficiency one of information resource causes the corresponding reduction quality of forming information provision of managing – basics of enterprise activity. Firstly, necessary to forming information, which stimulates individual development that includes not only economic data but all information resources, which can be useful for cognitive activity and development of irrational thinking. Information concerning professional judgment of an individual, but not highly specialized, such as covering the whole field of knowledge is needed to further complete development of knowledge.

Significant proportion of information that interesting for specialist is professional information: information needed to complete the task, and information for professional development. Information that allows to identify impact factors and prediction of dynamic developing enterprise with substantiating management decisions according to realities of business activity in market environment that is changing being influenced becoming of information economy is needed for specialist to increasing core competencies of enterprise.

System of managing an enterprise requires substantiated

conclusions and recommendations (new information), important and substantial facts (relevant information) that comprehensively provide generation of knowledge (through new information) and substantiate it with prove of reality and feasibility (through relevant data).

Impact on enterprise activity through professional judgment, based on which is determined by amount of relevant information, carried out its evaluation to forming several alternatives, the effectiveness of which is determined by qualitative and quantitative parameters of management information are characteristic feature of decisions.

Convergence of managing information with analytical applications of Big Data System allows to increasing the level of quality parameters of relevant information and promotes increase of information potential and also management quality.

The informational stage of the development of economy and society, which characterized by the intensity of information exchange and globalization, put forward new requirements for the approaches used in the formation of strategies. First of all, this is due to the fact that today the external environment is changing much faster and deeper than before, and the degree of uncertainty of the influence of various factors on the future increases. Approaches to the development of innovative strategies evolutionarily changed under the influence of new conditions of world development, the internal source of which is a person with its psycho physiological features and the ability to transform thinking (Figure 2.9).

Lower level takes strategy that based on available resources, that is, an option in which the strategic thinking of a management system is limited to assets that are available for use. Such an approach could be considered effective at the beginning of the last century, when land, capital and assets were the priority factor in production.

Owning a larger volume of assets guaranteed the enterprise a competitive edge, and the strategy was to save capital and provide increase of asset. Of course, in today's economic conditions, such an approach is not only ineffective, but also dangerous for business.

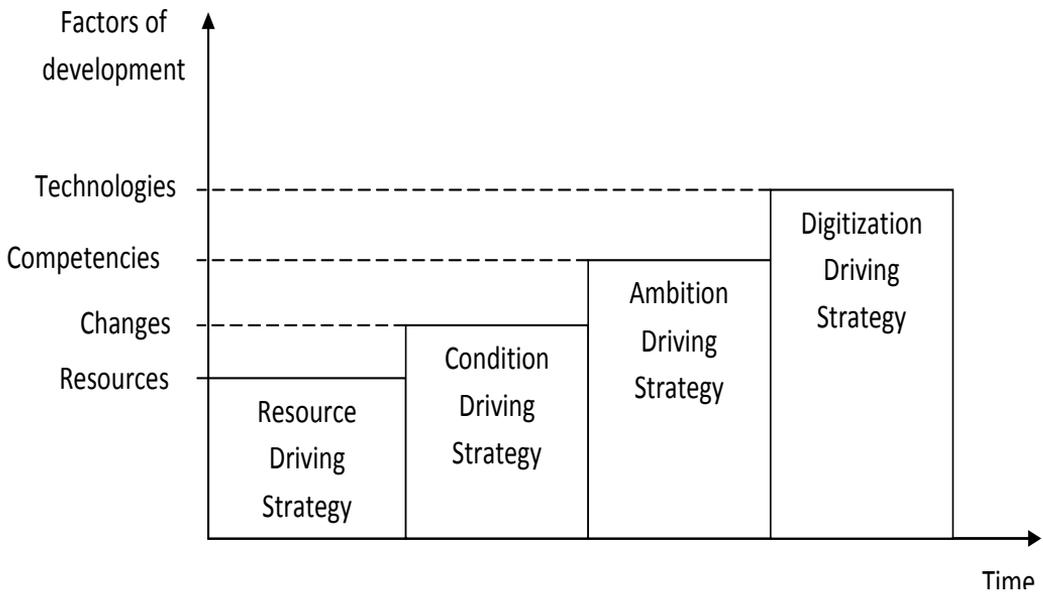


Fig. 2.9. Evolution of approaches to strategy development

The asset framework is a narrower approach to development that is unable to meet the current requirements of compliance with competitive dynamics in the external economic environment.

The next step towards the transition to innovation management is the approach to developing a strategy that based on the conditions of activity. In contrast to the previous approach, it is anticipated that achievement of competitive stability is ensured not through the ownership of assets but by the speed of adapting the enterprise to new environments with the ability to develop assets and create new products and services.

Such approach allows timely response to past and current changes in the external economic environment, taking into account the internal conditions inherent in business.

Accordingly, the planning process involves the collection of Big Data on the state of the market and the trends in its change, as well as on the activities of the enterprise at the current time and in the recent past. However, one should not forget that the changes taking place rapidly on the market make the future increasingly uncertain and less predictable.

The traditional process of strategy development is, first of all, analytical activity, the result of which is the choice of one of the most acceptable scenarios for the development of the enterprise, which will then be transformed into a business plan and specific planning indicators. At the same time, the risks inherent in such a strategy are not at the development stage, but in the process of its implementation, and the main obstacle to its successful implementation is that before the management system, there are two complex tasks, which have to be solved simultaneously, – risk management in conditions of uncertainty and support of strategic decisions by personnel of the company.

The following approach (Ambition Driving Strategy) does not reject the analytical methods of the traditional approach, based on the conditions of development. At the level of strategy development based on ambition, analytical methods and procedures are integrated with the processes and tools that provide creativity, dynamism and interest from the staff of the enterprise.

Distinctive features of this innovative approach are: the ambition of goals; behavioral management context; continuity of change management. Enterprises that are focused on ambitious development strategies determine the competence that is a complex of developed skills, knowledge, technologies, patterns, ownership, which guarantees the company the achievement of a stable competitive position in comparison with other economic entities.

A combination of core competencies provides the uniqueness (individuality) of business models and draft decisions, repeat (simulate) which competitors cannot, which is provided not only by a set of technological solutions, but by a number of knowledge, ideas, professional competences, skills, information.

It is the low dynamic ability, the inability to quickly adapt to changes in the market and manage knowledge is one of the most significant reasons for the weak competitive position of enterprises. A company that strives for leadership should provide a high innovation potential in developing a strategy that responds appropriately to the development of new products and services, human resources management, customer

relationship management policy, implementation of innovation in the management model. Today, the most effective approach is to develop a strategy based on digital technologies, since exactly technologies are promising competence of an enterprise that is oriented towards innovative development. Enterprises have discovered that new relationships are not limited to their employees and consumers – the real opportunity was to become part of many new global networks that unite companies, people and things in various industries around the world.

This situation and the extent of its impact on the transformation of modern business opens up a new era of economic and social relations – «The Economy of All of Us», when enterprises become part of a single «digital fabric» that combines all aspects of business. Intelligent equipment becomes a kind of bridge connecting the digital enterprise and the physical world.

Today, within the framework of the concept of Industrial Internet of Things, many companies implement «smart» sensors in a variety of digital devices and bind them together.

After that, customers can get more than just new products and services, namely the benefits and the results they want. In this sense, the market is fundamentally changing under the influence of the development of new type companies with an innovative strategy, which involves offering the customer not a products or services, and the result of using a combination of digital technologies of the enterprise with intelligent end devices that used by the client. This is evolution not only in the strategy of development, but in the economy – the economy of the final result.

Thus, the next level of production efficiency will be the result of latest discoveries in the field of intelligent software. This can contribute to a new stage of evolution in all areas of business structures. Digitization Driving Strategy is a serious step towards radical changes.

Such strategy cannot be defined by a modernization tool that integrated with general business strategy. Digital changes are global transformations that are based on a digital basis, with the incorporation of

their basic provisions into the development strategy, business model, operational activities and corporate culture of the enterprise. The construction of the Digitization Driving Strategy is based on traditional factors of competitive growth, with the strengthening of key competencies that are updated in accordance with the requirements of the digital sphere (Figure 2.10).

The central factor in digital transformation is innovation, which today is an obvious feature of a digital-oriented business, and therefore increases the amount of information processing by expanding the networks of interconnections and promoting new products through the digital platform. The factor of innovations is directly related to the factor of customers by direct and indirect links. Innovation is being developed for customers, who are the main driver of digital-transformation as technology finally begins to directly affect revenue generation.

Focusing on digital technologies in customer relationships allows anticipating their expectations and offer products earlier than competitors. Modern business has to change the approach of client-centricity on digitalization, that is, transform the behavioral aspect of customer perception not only as an object of the business model, but as participants in the chain of joint creation of valuables.

Customers have become a basic business objective for business, as they ensure the growth of the enterprise. Growth is not only the goal of business, but the objective need to maintain the viability of the business entity with a transition to a higher level of global changes. Efficiency is a mirror image of growth that based on digital transactions.

Compliance with digital principles means creating as much value as possible for each amount of funds that enumerated by customers. Thus, the expansion of the target audience is achieved with an increase in the scale of the proposal, which is a new basis of effectiveness.

In a modern economy, competition is increasingly becoming event of not resources, and strategies and investments by companies are increasingly geared towards creating core competencies and ensuring their dynamic abilities.

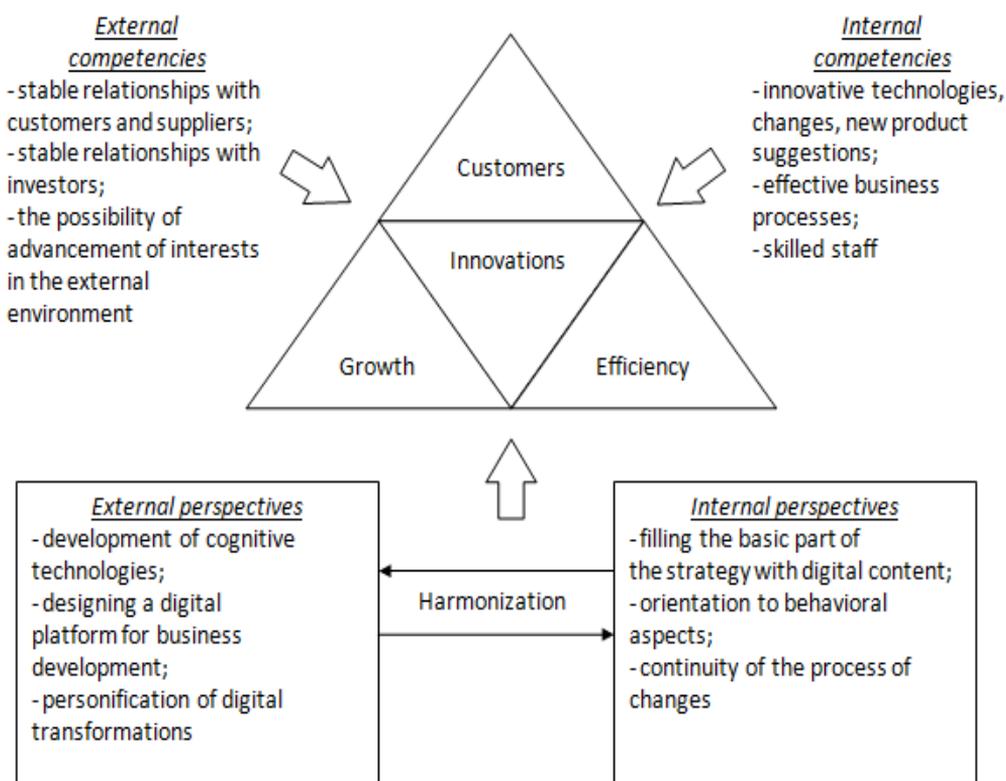


Fig. 2.10. Totality of factors, competencies and perspectives in shaping the model of digital transformation

Digital transformation, innovative potential, ability to form more effective strategies and constantly developing the company, updating its structure and key business processes in response to the challenges of the external environment play an increasingly important role.

The desire to win in a competitive struggle brings new requirements to managers who have to set ambitious but achievable goals, shape the vision of the future company and make it the property of all employees, stimulate the search and find new non-trivial decisions in transforming enterprise activity on digital platform.

2.3. Forming roadmap of the information conversion in management

Successful activity of the enterprise depends on many factors, among which the strategy occupies a special place, because it is a master plan of action that determines the priority tasks for the assessment of resources, risks, opportunities and constraints according to the individual characteristics of the business.

The strategy can be called a scenario for achieving an ideal result in accordance with the chosen model of activity and implementation of core competencies of the enterprise. The strategy is a system of installations aimed at long-term strengthening of the competitiveness of the enterprise, in which the reputation of the business entity is realized, which includes the corporate and personal brand.

Strategy is formed as a system of processes of «act», «plan», «do», «learn». The model of effective strategy includes the purpose of the activity, planning, the formation of a team of experts, risk management, discipline of implementation, communication, financing and environmental friendliness. The latter factor is mandatory for modern business development, as it is in line with the concept of corporate social responsibility, which is the basis for sustainable growth of activity and strengthening of competitiveness. Today for a successful management of activities it is necessary to consider business as an ecosystem with complex financial and corporate relations (Figure 2.11).

It is important to provide a single platform of relations based on digital technologies that combine financial and information flows. According to the concept of the ecosystem in the economy, business is a symbiosis, where different companies collaborate to provide sustainable growth. Enterprises create teams that can easily adapt to new markets and forming partnerships with other companies, customers, and even competitors.

The business strategy in the modern ecosystem of the economic environment is the result of decisions of managerial staff of the enterprise on landmarks, principles and rules that need to be reconciled to maximize the company's long-term valuable. Effective strategy – weighed, ambitious, well-digitized, inclined to critique and doubt, coordinated.

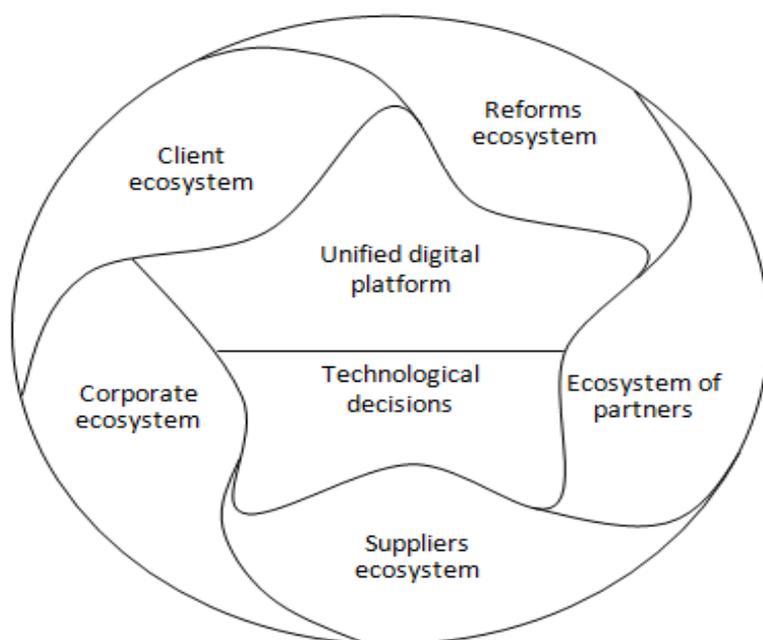


Fig. 2.11. Ecosystem of business at the present stage of economic development

The strategic task in the enterprise ecosystem is to find new, different sources of growth, other markets for providing competitive dynamics, envisaging or adapting activities to new conditions and factors, or transforming the essence of business and its strategic idea.

In order to measure the progress of innovation growth, it is necessary to form a peculiar action plan – a roadmap of a strategy that describes the main stages of development, which are guidelines for the enterprise to make changes in processes in all subsystems.

1. An outline of an action plan that provides an initial version of the analysis of processes and risk analysis in accordance with the possibilities and limitations of activity. This stage is determined by the most difficult, since it requires a creative approach with the inclusion of elements of novelty, which allow coordinating the competencies of the enterprise.

2. The develop of pilot project of strategy. A key point in determining priority development – from local effort to experiment in order to establish how the management system will function on the scope of

changes. The choice of meters is aimed at establishing how the staff is put to the chosen initiative, with adjustments to the original version of the plan.

3. Planning and start initiatives concerning change management in accordance with formed model of development strategy. The beginning of the actual implementation of management changes in the enterprise: the development of hypotheses, forming reaction patterns, experiment, analysis of the results during the project changes, the participation of the subsystems of the enterprise in the dissemination of initiatives to manage change in the activity. At this stage, more specific meters are needed, in particular, reflecting changes in business-related costs (cost reduction), changes in organizational culture (increasing knowledge sharing between project teams, the intensity of using corporate knowledge bases, etc.).

4. Provision of dissemination and support of first results. At this stage, change management receives the status of an official project at the enterprise. A selection of methods for measuring results is being conducted, and for this can also involve outside consultants.

5. Promotion of change management policy at the enterprise. Organizational structure (management of changes embedded in the business model of the enterprise) and organizational culture (the exchange, use and distribution of changes become the company's daily practice) are changing; necessary methods that reflecting benefits of the enterprise (dissemination of best practices, evaluation of efficiency, etc.).

6. Measurement of results by quantitative and qualitative parameters, which allows drawing conclusions about the prospects of the strategy and make adjustments if necessary. Such measurements are primarily aimed at marketing and sales, but may also relate to other types of activities, such as communications (effective knowledge transfer in the chain of «manufacturer–seller–customer»), which also gives as a result the sales growth, or the spread of best practices.

Implementing a strategy is a process by which the enterprise creates valuable for the ecosystem participants, a process by which the company forms its own individual characteristics that distinguish it from

competitors and make it more attractive to consumers. The formation of a strategy is a complex process, but at least the issues need to be addressed in its implementation, in particular, it is necessary to ensure the implementation of key management processes (Table 2.4).

Not only the overall business strategy, and also the strategy for developing an information system for each enterprise is individual and is determined primarily by the objectives of its operation, as well as the existing capabilities and limitations of activity. Thus, business strategy and development strategy of information system are interdependent and complementary instruments of managing an enterprise.

Table 2.4

Managerial processes of influence on the implementation of the strategy

<i>Process</i>	<i>Characteristic</i>
Formulation and measurement of strategy	The strategy should be formulated in the final version with its wording, which is understandable for each subject of management. Not only financial benchmarks must be measured, but also corporate, social and environmental development levers
Management of a limited number of strategic initiatives	A significant number of processes can lead to complicated management and slow down in the implementation of the strategy. In determining mandatory processes, it is necessary to consider not only their financial nature, but also to focus on key processes of sustainable development, among which the innovations, customer retention and digital development are dominant concepts
Monitoring and managing the implementation process	The proposal of several hypotheses for consideration in order to evaluate processes in accordance with a defined plan. Establishing interrelationships between strategy elements for organization feedback between control subsystems and the external environment. Use in developing the hypothesis of the principles of operational perfection strategy for adapting of activity to constantly changing external and internal conditions
Implementation of the strategy at all levels of the enterprise	Familiarization of personnel at all levels of the organization with the basic provisions of the formed strategy.

<i>Process</i>	<i>Characteristic</i>
Implementation of the strategy at all levels of the enterprise	This is the transfer of the strategy to operational levels with the definition of the degree of guiding influence and responsibility. Delegation of strategy implementation in the subsystems of the enterprise direct executors according to their professional competence. Establishing effective communication as a program that consistently involves all subsystems of the enterprise to priorities and progress of the strategy. The use of information channels for the co-ordination and coordination of the basic provisions of the strategy
Coordination of implementation of business unit strategy	Implementation of the strategy requires the coordination and integration of all parts in the enterprise system.
Coordination of implementation of business unit strategy	Educational corporate programs, system of motivation of the organization should be focused on strategic priorities. Information technologies development should be guided by the same perspectives that are prioritized for marketing, financial, engineering services, customer service departments, etc. Enterprise departments should be familiar with the strategy priorities and optimize their own activities within the internal borders of change
Link of strategic initiatives and budget of the enterprise activity	Structural compatibility of planning and budgeting should be ensured. The strategy includes long-term goals and programs when the budget is linked to short-term operational activities. The strategy is implemented with cross-management of business initiatives when the budget is structured hierarchically by different departments. Therefore, these processes should be synchronized to establish a link

An enterprise information system can be defined as a system of management processes that uses an integrated set of interacting elements (as well as their relationships) for collecting, processing, storing and providing information for achieving the set goals described in the development strategy.

Forming an enterprise information management system should be considered as one of the most important modern business development

programs, consisting of a chain of interconnected projects, the results of each of which are necessary for the implementation of the following plans.

The strategy of innovation development of the information system provides an answer to four basic business questions: «Why?», «What are the real needs?», «How?», «What are the expected results?» (Table 2.5).

The development of a strategy for an information management system involves following the specified stages, which constitute the basis or algorithm for the enterprise information environment.

1. The starting point is an assessment of the initial state of the management system, technological provision and information system of the enterprise.

2. Expected accomplishments – definition of the development strategy with the formation of a detailed pilot project.

3. Accessibility of resources – determining the necessary resources and tools that provide movement from the starting point to the desired results.

4. Digital transformation of information processes – the establishment of digital development priorities and their alignment with the general business strategy.

5. Implementation of hypotheses of innovative development – implementation of the plan to achieve the goals of the information system in accordance with the new rules of doing business, digitizing activities and implementing analytical applications for information development.

6. Formation of digital architecture – the development of a methodology and basic provisions for the organization of a digital platform information system, balanced with the platform of enterprise activities.

Table 2.5

Configuration of the main measurements of innovation development of information system managing an enterprise

<i>The basic question</i>	<i>Characteristics of development</i>
Why?	<p>The answer to the question is the business strategy with the mission, goals and objectives of the enterprise. Professionally and comprehensively developed business strategy allows optimizing the information system and formalizes the target indicators of the strategy.</p> <p>The place of the information system in the strategy is how it can affect the success and effectiveness of achieving the goals in the business development, as well as in assessing this impact on the activation of the enterprise</p>
What are the real needs?	<p>The answer to this question allows assessing the state of available resources and to predict the need for additional resources for the development of an information management system. It is imperative to assess the state of tangible and intangible resources with special attention to professional, technological and technical provision</p>
How?	<p>To answer this question, it is necessary to formalize the requirements for the resources that will be used for the development and operation of the information system, as well as to choose the most optimal variant of development. Variant of information system development is possible scenarios of different technological support to support actual and expected level of management</p>
What are the expected results?	<p>This question should be asked in order to identify and clearly formalize the effects of the development of the information system, permissible costs and risks. It is necessary to consider the administrative, social and economic effects in the complex, while developing qualitative and quantitative performance indicators. Such indicators should be interlinked with the indicators developed for the business strategy. In the process of developing a strategy for the development of the information system there should be laid the basis for optimization of all planned costs, as well as formalized possible risks for the further development of preventive measures</p>

In the process of developing a strategy for the development of the information system of the enterprise, it is necessary to achieve the correspondence between the planned and desirable level of business development, which should be reflected in the life cycle of the development of the information system of management (Figure 2.12).

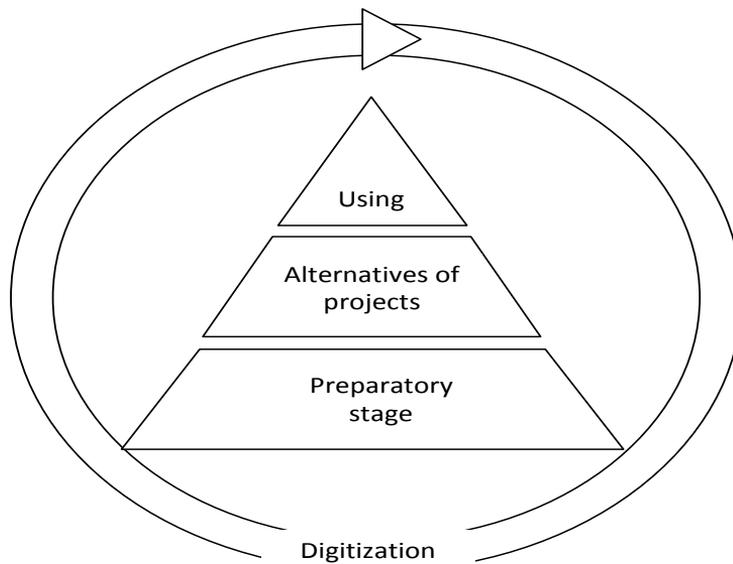


Fig. 2.12. Stages of life cycle of development of information management system

At the preparatory stage, a strategy for the development of an information management system through the design of a model, including business strategy analysis, formalization of business priorities and the identification of digital potential, is being developed.

Strategy of the development of the information system is formed in the directions, in particular, the organization of the composition of information and business processes, the implementation of digital architecture, ensuring a balance between tangible and intangible resources.

At these stages, it is imperative to ensure the proper professional competence, which is the basic factor for the development of information management system. It is important to develop a training program and involve in raising the level of professional competence of leading specialists.

The next step is to develop a plan for implementing the strategy, which includes preparatory activities in technological, technical, resource and professional fields.

When formulating alternatives to the implementation of the program for the development of the information system, it is necessary

to ensure that they are in line with the actual business requirements, that is, contribute to the development of not only operational level, but also predicted level of implementation of business functions.

Achievement of the goals is conditioned by the implementation of certain measures and projects, without which it is impossible to further develop in accordance with the chosen strategy; the projects should be interconnected and mutually supportive. Variant formation of projects is carried out according to the principles of multi-project management (to achieve a balance between the project boundaries and the resources used).

The development of an information management system can be initiated only after the definition and formalization of short-term, intermediate and long-term goals, after which it is necessary to proceed to the implementation of operational measures, the implementation of which will allow provision of the readiness of the enterprise to implement the priority projects.

Effective implementation of priority projects is a guarantee of the achievement of the set short-term goals, ie the transition to a new quality level of information management system development. After this, the review and adjustment of the following goals, measures and projects, as the process of development of the information system is open and depends on both internal and external factors of the enterprise. After the correction, the necessary measures are taken again and projects are being launched to achieve intermediate goals.

The use of a pilot project for the development of an information system is carried out from the established and agreed basic provisions that correspond to the individual characteristics of the enterprise. At the stage of project use it is necessary to take into account constant changes in the conditions of activity, that is, the influence of the environment and the corresponding reaction of the internal environment of the enterprise.

For each development option, it is necessary to assess the probability of occurrence of risks, opportunities for their prevention, and also consider measures to reduce the negative effects in case of these risks.

The most typical risks include: the right choice of digital solution; risk of incompleteness of the implementation project; risks of product quality of the project; risks of project exclusion, etc.

Analysis of options for development by other groups of criteria (time, budget) allows estimating the terms of development, introduction and operation of technological decisions and to compare financial expenses in possible scenarios.

For an effective transition to a new level of information system development, it is necessary to organize all processes of the enterprise in accordance with the key factors.

1) Availability of a developed business strategy.

2) The factor of professional competencies – the formed team of innovators, the presence of candidates among experts, which could make a team of changes, sufficient level of ownership of modern management principles, the possibility of attracting system specialists and analysts, the positive attitude of employees to change.

3) Developed business processes – readiness for optimization and, if necessary, to change business processes of the enterprise.

4) Documentary provision – the availability and use of documents regulating the activities of departments and employees, instructions on complex and critical processes, production standards and statistics.

5) Infrastructure development level – sufficient level of communication, productivity of workstations and servers, availability of qualified specialists in the development of digital infrastructure.

6) Financial provision – the availability of free cash for investing in the innovative development of the information system, evaluation of possible sources of obtaining an economic effect, development and approval of a reasonable budget for development.

If the enterprise's management, after analyzing these factors, understands that the level of readiness is rather low, then it would be advisable to carry out a project to prepare the enterprise for the development of an information management system. Main actions may be preceded by such a project or implemented in parallel, in accordance with the criticality of terms and availability of resources of the enterprise.

Based on the assessment of the readiness of the information system and the organizational structure for development, a view is made on the enterprise as an open socio-economic system with a comprehensive mechanism of interconnections and the integration of elements of the internal and external environment (Figure 2.13).

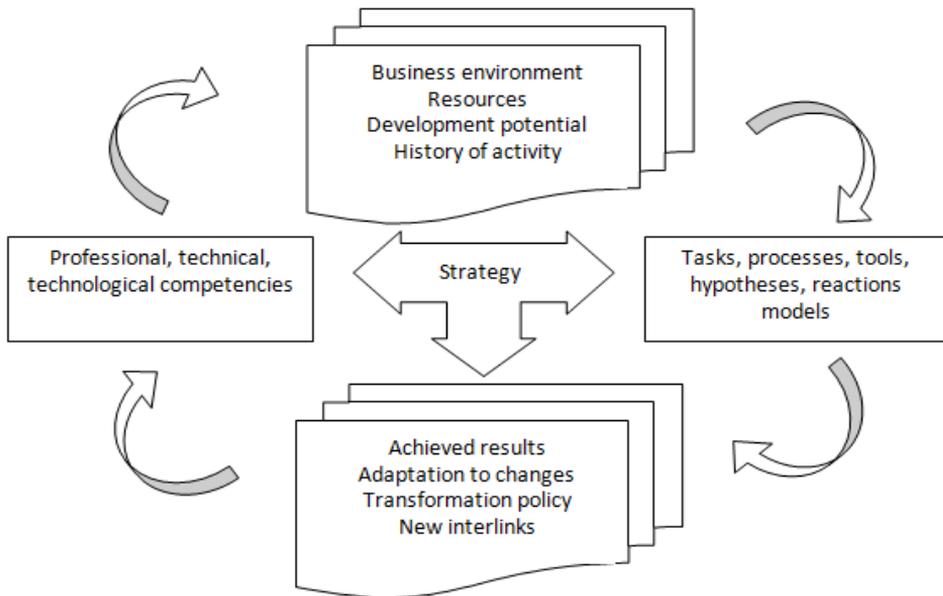


Fig. 2.13. Model of description of development of enterprise organizational system

The model of enterprise development is based on the principle of conformity (congruence) of organizational behavior, which explains interconnections between subsystems of the enterprise – changes in one subsystem affect the changes in all the constituent elements of the enterprise. Therefore, it is imperative to ensure a balance in the changes to achieve a state of equilibrium with minimization of the situation of uncertainty. Within the framework of the system approach, there are different methods of making changes that can «work» or «not work» in the particular situation under consideration, depending on its characteristics.

Preliminary diagnostics, in order to identify signs of a moderate or radical, limited or unrestricted change situation, may determine the cor-

rect choice of methodology for making changes and, consequently, the success of the pilot project activities. One of the measures is allocation in the information environment of enterprise information system of managing a competition.

The information system of managing a competition focuses on the data that is needed to obtain and maintain a competitive advantage. Such information covers all of the company's functional needs. This is a platform that synchronizes the operation of various subsystems of the enterprise to gain competitive advantage. The information system of managing competition links several management systems and directs them to achieve competitive advantage. The information system of managing competition helps the production centers to correctly implement the competition formula.

The introduction of information system of managing competition should begin with a formula of competition, which is determined not by the extraordinary gain of one or another function, but by the efficiency of the interconnection of several functions. Without these interlinks, nothing will work, because they are the key factors of success. For example, the formula for competition can be based on the rapid adaptation of production to market requirements.

Another option of the competition formula is the premature offer of goods and services that meet customers' expectations. That is there are a lot of variants of the formula of competition – the main thing is to develop it according to the characteristics of the activity of the enterprise, taking into account the strategy and development plan.

Each key success factor is provided by an «information link» that collects and processes critical information for a key success factor. Since the competition formula usually includes several key success factors, several communication links are required to support it. Information links consist of databases and applications. The database contains the information that is needed for a key success factor. This information should be carefully defined and correlated with those decisions and actions that should be taken during the operation of the company.

Applications are needed to process information stored in databases. Information systems of managing competition are oriented not only

on information technologies, but also on the competition formula, its key success factors and related information communications.

However, the implementation of optimal information technology to support the developed strategy is not an easy task. The choice of system or the development of application software packages is not difficult, but the complexity is caused by the rapid change in information technology and the dogmatism of «experts», which is directly proportional to the uncertainty of future of information technology.

When introducing information management systems for competition it is necessary: to understand the company's chosen formula of competition and the resulting requirements for information technology; to understand new possibilities of information technologies; get rid of the pressure of old experience and patterned decisions.

In such a system, it is necessary to change the role and meaning of information. Understanding the essence of information as an attribute of the material world that organizes the unity of social relations is an important factor in the development of the competitiveness of business.

The formation of a more complex system in the field of management or its modernization to improve efficiency depends, first of all, on how far within the management will be able to combine different information attributes of different-grade control elements into a single information space.

Elements and the system as a whole will be more manageable and sustainable than to a greater extent the single space will be continuous and consistent. The disparate, uncoordinated information from the objects of management destroys the unity of the management environment.

It is very important to avoid this, otherwise, the development of economic relations itself, accompanied by the intensification of information processes, multiplies the effect from management defects.

The dynamics of economic transformation is an active accelerator of business growth, and, consequently, production, commercial and social information, which increases the value of its integrative sign of influence on managerial processes. Technically, modern information

space is implemented as a network of interconnected units of information concentration. In this case, by physically the network can be organized hierarchically, and in terms of management, the network may not have a center.

Links between the nodes are mostly asymmetrical, but they are all necessary for the functioning of the network, that is to circulate information, money, technology, goods or services. Thus, the network is the type of information organization that provides sustainable adaptation and maximum flexibility that is necessary for modern business. It allows constantly change the configuration of management, and, accordingly, develop and implement various strategy options.

Elements of the information network are the most effective form of organization of the management system, which allows you to start the implementation of new tasks, without destroying the basic organizational rules and not changing the established orientations. Information in the complex organization of the management system is considered from the point of view of the processes of collecting data, their accumulation, distribution, summation, transition to a new quality, updating, systematization, to transform them into a usable form.

Managing information as an organizational resource allows making timely adjustments to the activities of the enterprise and obtains better economic results. Modern forms of information organization provide a new environment for management objects – the only information space that management provides for the dynamics of business.

The formation and development of the information system of the enterprise is carried out in accordance with the project, which should take into account organizational, functional, technological and managerial characteristics taking into account the parameters of the business strategy.

Managing a project of information system is a separate branch of knowledge requiring appropriate training and skills. This is not only action programs, but a set of interrelated measures designed to achieve a specific goal for qualitative changes in information management. Forming the project of information system is based on three determinants

– time, quality, cost. The information has always been subject to increased requirements, which is why these factors are key to ensuring the qualitative characteristics of the data used for the activity and development of the enterprise.

These factors should also ensure the distinctive feature of the project – uniqueness. The development of the information system project is carried out taking into account the organizational, control, managerial factors that provide the appropriate parameters of information, taking into account the individual aspect of business.

The project of information system is an element of a general business development project, which uses the result of modernization of information provision of management. At each stage of the business development project, there is a need for some information that forms solutions in the subsystems and integrates with the data in other subsystems of the enterprise, thus forming an information management grid (Figure 2.14).

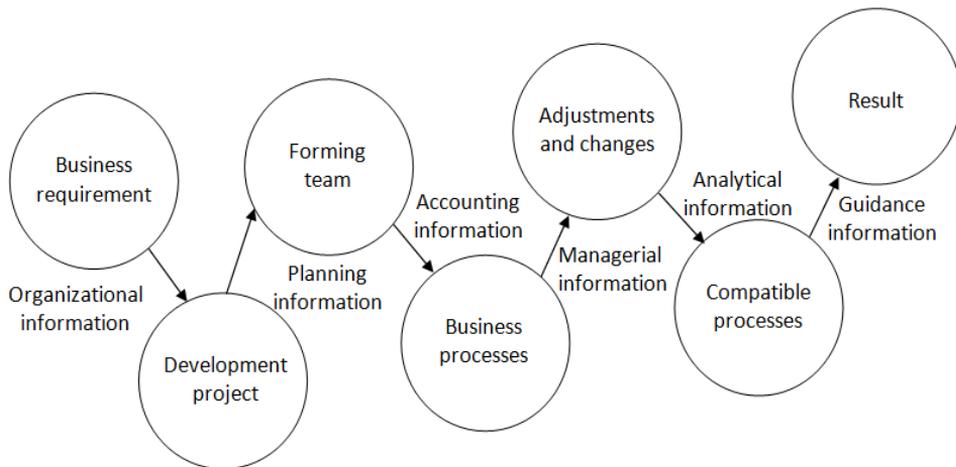


Fig. 2.14. Schematic interpretation of development of business development project based on information provision

The project of information system is also an important factor in the roadmap of information transformation in the management of the enterprise. Before starting to develop a roadmap, it is necessary to determine the general starting point and the direction in which the enterprise plans to move. Since the roadmap of information transformation

is a complex system of informational, economic and professional relations in the enterprise environment.

The successful transformation of information provision of management involves implementation of a new system of competences, taking into account innovative technologies and trends in the field of activity.

At formation of a roadmap is important to adhere to the principle of confrontation, which allows you to go beyond the usual style of information management and find new ways and approaches for innovation in information processes. The roadmap should be designed to activate (initialize), design and integrate information processes for their combination with the general model of business development as a single information system that provides all subsystems of the enterprise's activity with integration with the external environment (Figure 2.15).

Formation of a roadmap allows providing a comprehensive transformation in the information system of the enterprise with the organization of a new level of information relations.

Each of the stages in the roadmap can vary according to the needs and requirements of the business. At each stage, it is necessary to evaluate the result and only after recognizing it satisfactory to move to a new stage. The model of «cascade» and «web» is implemented in roadmap.

The first model allows managing all processes gradually during the development and implementation stages. The model «web» involves establishing close links between processes in all subsystems of the enterprise, which allows us to form a complex system of relationships and bring information management to a qualitatively new level.

Road map of information transformation is intended for measurement, calculation, formation, processing, transmission and storage of information about: current indicators of business processes; maximum allowable values of parameters in accordance with business goals and strategies; planned indicators in accordance with the set of decisions as a unity of capabilities, potential, risks and the originally chosen development strategy; generalized reporting indicators of the enterprise; data for objective decision-making.

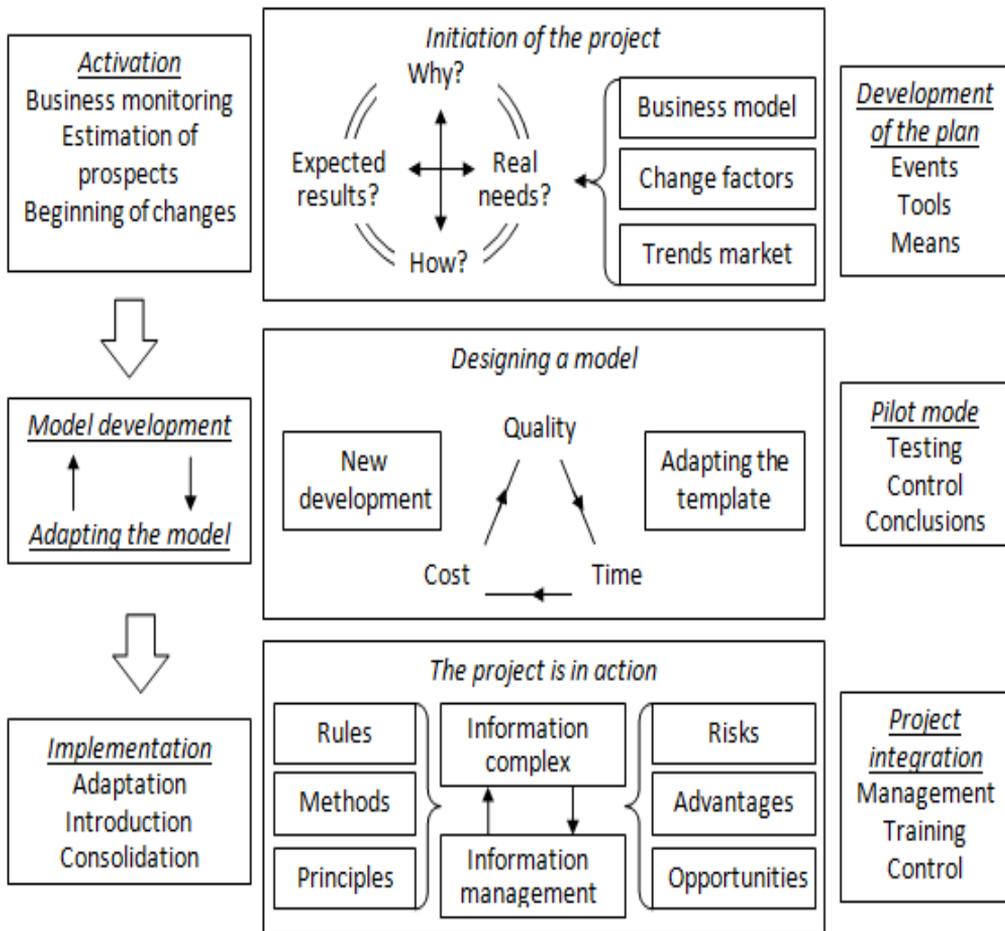


Fig. 2.15. Roadmap of information transformation in the managing an enterprise

Roadmap of information transformation covers information and communication connections of all processes of enterprise activity. With the help of the roadmap, the information provision of management process is developed in accordance with the distinctive features of the enterprise, the general tendencies of its development and the external context that providing the expected competitive advantages.

Conclusions to section 2

The innovative transformations of information-analytical management systems is investigated in the section, focusing on the software, communication and intelligence components of the processing, transmission and storage of data. The innovative foundation for the transformation of modern business, based on information systems of a new type, is laid. The road map of information transformation in management is formed as a program of actions for modernization of information management in the conditions of innovative changes inherent in the digital business development trend.

1. The organizational code of innovation changes in the activity of the enterprise is determined, which allows forming an individual program of enterprise development in accordance with the estimation of the complex of results, factors, prospects and risks. The model of constructions of organizational code of elements of the enterprise is proposed, which is a complicated mechanism of changes, which inherent features of radical innovative decisions, in which the transformations in the values of the enterprise are implemented, integration of information and technological infrastructure with re-design of business processes.

2. The self-development of the information-analytical system is characterized as a process of external and internal diagnostics, which in aggregate is the starting point for making decisions in the context of updating the information environment of the enterprise. Self-development is a group of effective measures to avoid automatic information management, when future risks and uncertainty are smooth out, and knowledge formation is carried out by the results of events and for solving emerging problems.

3. The initiative model of changes of adaptive enterprises is formed in which the strategic process with the integration of strategic thinking, the integrated system of decision making and the mechanism of reaction to change are implemented. It allows establishing effective interaction between the key subjects of management and promotes the increase of qualitative parameters of administrative decisions. The

initiative model of enterprise changes is used to assess the prospects of possible strategies, which allows not to waste time developing an action plan that will not be implemented due to its inefficiency in the future.

4. The configuration of the main measurements of the innovation development of the information management system is described with the definition of the stages that make up the basis or algorithm for the information environment of the enterprise. This allowed the formation of an optimal system of management processes with the definition of an integrated set of interacting elements (as well as their links) for collecting, processing, storing and providing information for achieving the established goals described in the business development strategy.

5. The model of the description of the development of the organizational system of the enterprise is proposed, on the basis of which a view on the enterprise is formed as an open socio-economic system with a complex mechanism of interconnections and integration of elements of the internal and external environment. The model of enterprise development is based on the principle of conformity (congruence) of organizational behavior, which explains interconnections between subsystems of the enterprise – changes in one subsystem affect the changes in all the constituent elements of the enterprise.

CONCLUSIONS

The monograph is devoted to theoretical research and solves the scientific problem of innovation transformation of information systems of the enterprise in accordance with the trend of managerial modernization and digitalization of business. For this purpose, proposals were made for the development of information management of a new type of enterprise with an increase in the efficiency of information processes regarding the proposal of optimal data for the system of sustainable business development. The most significant results that characterizing the result of scientific research are as follows:

1. The digital-strategy is described as a new prototype of business reconstruction, namely, a flexible modular set of tools and models that can be adapted to the needs of each enterprise in line with the expectation of continuous development and effective implementation of activities. Such strategy is based on the philosophy that provides feedback at the very beginning of the work, when the product is still far from perfect, because that is what gives the best results.

2. The concept of innovative changes in the information management of the enterprise is proposed, which provides the formation of a complex of decisions and actions aimed at achieving competitive advantages that will become the basis for the positioning of the subject of economic activity in the external economic environment. Information management is determined by the ability to innovate in a changing environment of the economic environment, which corresponds to the definition of new values in the dynamics of economic processes with the formation of new knowledge as a mandatory stage for achieving sustainability of development.

3. The hierarchical model of managing changes is developed, in which the emphasis of the target changes is put on the transition from the real state of affairs to real actions, which ensures the transformation of expectations into result. The model takes into account contradictions in the interests of the development of the internal and external environment, as a result of which it is necessary to ensure partnership and plan development with the interests of not only business, but also economy and society.

4. The construction of the Digitization Driving Strategy is

described, based on traditional factors of competitive growth with the strengthening of core competencies that are updated in accordance with the requirements of the digital sphere. The central factor in digital transformation is innovations, which today is an obvious feature of a digital-oriented business, and therefore increases the amount of information processing by expanding the networks of interconnections and promoting new products through the digital platform.

5. The roadmap of information transformation in managing an enterprise is developed, which allowed providing a comprehensive transformation in the information system of the enterprise with the organization of a new level of information relations. The roadmap is proposed for activation (initialization), designing and integration of information processes for their combination with the general model of business development as a single information system, which provides all subsystems of the enterprise with integration with the external environment.

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