CHANGE MANAGEMENT AS AN INSTRUMENT IN IMPROVING CRISIS SUSTAINABILITY OF ORGANISATIONS IN THE INFORMATION AND COMMUNICATIONS TECHNOLOGY SECTOR: THE CASE OF BULGARIA

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Abstract

The paper presents the results of an empirical survey conducted in the ICT sector in Bulgaria. An effective change management model was developed which also aims to improve the organisations' crisis sustainability. The model allows to classify organisations in the following 4 groups according to their position in the "Change management competencies" – "Using change to improve crisis sustainability" matrix: availability of change management competencies - active use of change in order to improve crisis sustainability (square 1), inefficient response to change – insufficient use of change to improve crisis sustainability (square 2), dependency when managing change – active use of change to improve crisis sustainability (square 3) and inability to manage change – inactive use of change to improve crisis sustainability (square 4). This makes it possible to conduct well-founded evaluation related to the efficiency of the activities in the field of change management and to formulate well-grounded recommendations for improving the crisis sustainability of the organisations.

Keywords: change management; crisis management; integration; crisis sustainability; ICT sector
JEL Codes: L29; M19

Introduction

The crisis-related processes over the past years have led to raising the topical issue about the efficiency of decisions organisations make in the field of change management and the improvement of their crisis sustainability. This, on its part, enhances the importance of change management in the process of securing opportunities for long-term

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development of modern organisations. Thus, organisations are forced not only to look for opportunities to keep their competitive advantages but also to improve the activities related to overcoming crisis situations. This subject matter is extremely topical in Bulgaria where special importance is attached to the following issues: improving the decisions related to overcoming crisis events, improving organisations' flexibility, stimulating innovations, improving the organisations' management system, efficient monitoring of the business environment, guaranteeing business continuity etc.

This, for its part, calls for the implementation of a new approach in management theory related to change management as an instrument used to enhance the crisis sustainability of organisations. Crisis management is closely related to change management, i. e. in its essence change management should be interpreted as crisis management because a crisis is a change process which concerns the viability of the organisation and calls for urgent decisions about changes in the tactical and strategic plan.

The aim of the present paper is to develop a model for efficient change management and improvement of crisis sustainability which is to be adopted in the organisations in the information and communications technology sector in Bulgaria.

To achieve this goal the following tasks have been carried out:

1. Studying the specialized literature and the international experience in the field of change management with respect to improving the crisis sustainability of organisations.

2. Creating a model for efficient change management of the practices and improving the crisis sustainability of the organisations.

3. Conducting the empirical research – a questionnaire-based study of the practices related to change management as an instrument to improve crisis sustainability of organisations in the information and communications technology sector. This is the ground for outlining problem areas and practical opportunities related to improving practices in the research area.

Specifically, in this paper, first a literature review in the inspected research area is presented. Second, the research methodology is clarified. Third, the survey results are classified. Finally, important conclusions concerning managerial theory and praxis are drawn.

Literature Review

Winford "Dutch" Holland describes the 80-ies of the past century as "*the discovery of change*", the 90ies – as "*the management of change*" era and the period after 2000 he designates as "*mastering the change*". (Holland, 2001, p. 21) In this way he points out

that change has become a standard managerial activity which facilitates the process of adapting the organisation to the changes in the environment and helps organisations display more actively its inner potential.

A set of *principles* are to be observed in the change management process. (Milner, 2006, p.14) In the first place, an in-depth analysis should be conducted of the causes which lead to changes as well as the possible ways to conduct them, including an assessment of their efficiency. Second, a compulsory element of the organisational culture is the readiness for constant changes and the willingness to acquire new knowledge and skills.

Third, it is appropriate to stimulate evolutionary changes by paying special attention to every successful interim change. Fourth, the development of adequate (positive) strategies to counteract every source of opposition is of key importance. Therefore, it is especially useful to involve all associates in the process of conducting the changes in order to limit likely opposition. The good awareness of the results and the issues that remain unresolved in the change process play a strong motivating role. Fifth, the change process in the organisation should be considered to be long-term and special attention should be paid to the "melting" and "freezing" stages (Lewin, 1951).

Practical ideas related to building the effective change management model and improving the crisis sustainability of organisations can be found in the Kotter model, which includes the following stages (Kotter, 2007):

o Establish a sense of urgency.
o Form a powerful guiding coalition.
o Create a vision.
o Communicate the vision.
o Empower others to act on the vision.
o Plan for and create short term wins.
o Consolidate improvements and produce more change.
o Institutionalize new approaches.

A crisis is a disruption of the continuous development, a turning point or a climax in a dangerous situation characterized with strong ambivalence (contradiction) of development opportunities (Fink, 2002, p.15). "A crisis is a disruption that physically affects a system as a whole and threatens its basic assumptions, its subjective sense of self, its existential core". (Pauchant & Mitroff, 1992, p. 12) In other words, a crisis should be seen as a disruption in the equilibrium in the organisation as a result of the influence of factors from the external and/or internal environment. It is recommended that in case of complexity the reasons for the crisis be identified mostly within the organisation, i.e. the internal perspective in terms of crisis management is the leading one. After all, good

managers should continuously monitor for changes in the business environment and in the internal variables in the organisation and based on them identify possible risks related to the occurrence of a crisis. (Gilpin, D. R., & P. Murphy, in Coombs & Holladay, 2010)

The integration of the change management activities and crisis management requires paying special attention to crisis sustainability of organisations in the context of the concept of sustainable development of society. The term sustainability, for its part, includes "endurance, perseverance – it is called stability, observed in changes (disruptions) in the balanced, constant (habitual) system state and activity which causes forces which recover the initial precondition for functioning of the system". (Stanulov, 2002, p. 37) Human development and the scientific and technical revolution naturally give precedence to humanization of interpersonal relations and the need for synchronizing the interests of the different groups of influence on the organisation. In this regard the harmonization of the social space presupposes the regulation of external effects or external spending which are essentially social since they have considerable impact on the individual enterprises, households and the population of each country. This is the only way that sustainability and progress can be guaranteed within the individual social groups and to create conditions for the achievement of their goals. (Karpuhina, 2004, pp. 173-174) All that is in line with the sustainable development concept which essentially means "a change process where the exploitation of resources, the flow of investments, technology orientation and institutional changes are in coordination and strengthen the current and future potential needed for meeting human needs and desires". (Kovachev, 2001, p. 214)

Crisis sustainability is the ability of the system (organisation) to restore its equilibrium after handling the disruptions in its development trajectory. Crisis sustainability should be discussed in the context of the self-preservation law, namely: each system, consciously or spontaneously aims to preserve its quality definiteness. The mechanism for the realization of the self-preservation law includes the sustainability of the system to external and internal disruptions which lays out the condition for the strategic existence of the system. Quality sustainability is characterized with the number and diversity of components and links which form the structure of the system, i.e. the more complex the structure, the more sustainable it is in terms of external and internal impact. In this respect the "punctuated equilibrium" theory is of interest (Romanelli, Tushman, 1994). According to the authors of the theory the long stages of stability in the development of the organisation are interrupted by short, volcanic stages which question the entire reference framework of the organisation and require significant changes in the system. This organisation development model should be seen as permanent.

Over the past years the role of crisis decisions related to forecasting, slowing down and mitigating crisis (occurrences which to a great extent endanger profitability, reputation and the natural functioning of the organisation) has been growing; through providing opportunities for managing the processes of overcoming crisis and minimizing their adverse consequences etc. In this way management requires successful implementation of new crisis management methods which differ from the traditional and aid managers in their efforts in successful organisation development with "the iceberg of vulnerability of modern organisations" being in the centre of attention (Dalton &Dann, 2013, p.5).

Efficient crisis management requires that all associates of the organisation be involved in its activities depending on responsibility levels. Usually organisations have 3 levels of responsibility (it is possible to have 2 levels). In the event of crisis event the coordinating body (the crisis management team) determines its degree of importance. The levels of responsibility are interconnected with the degree of significance of crisis events and the activities undertaken by the respective level for handling the crisis situation. To achieve this goal the crisis events are represented as a pyramid. At the base of the pyramid are events defined as slightly unfavourable for the organisation. They involve the lowest risk, are quickly solved and this enquires the least resources and costs. Up the pyramid are the more complex issues which are perceived as crisis events. As a rule they require coordination because they usually affect and/or require the intervention of several units of the organisational structure. The top of the pyramid involves third-level crisis events which concern the entire organisation and bear the highest degree of risk for its usual functioning.

The information about the crisis event can be received from various sources: organisation's associates, the mass media, clients etc. In all three cases of crisis events crisis plans are applied in order to preserve the viability and the sustainability of the organisation. The information channel that the crisis management team uses is usually incorporated in the crisis plans. Every structural unit has at its disposal an operational crisis plan which is annual and regularly updated (at least once a year) depending on the changed conditions or the occurrence of crisis events. The operational crisis plans are developed on the basis of the strategic crisis plan of the organisation which is for a 3 to 5-year period and is also subject to an annual "smooth" update (after the first year the plan gets updated by including the sixth year from its initial development etc.). The strategic plan helps to achieve strategic goals as part of the crisis planning: keeping the organisation's reputation, enhancing its crisis sustainability and others. Consequently, the crisis management teams play an important role in enhancing the crisis sustainability of modern organisations because they conduct a varied set of activities related to forecasting

pre-crisis situations; developing crisis plans and programmes; using various management methods in times of crisis; conducting crisis trainings etc. This allows for the crisis management to be fully realized: pre-crisis management (timely identifying the crisis symptoms, including the solution of related problems); management in times of crisis (stabilizing the unstable situations, timely solution of problems, minimizing losses and missed opportunities etc.) and management of processes related to overcoming the crisis.

The authors of the present publication introduce an innovative solution to an issue that is important to managerial theory and practice. The specialized literature does not present methods which can be used to determine the quantitative gauges of organisations' propensity to change and thus improve their crisis sustainability. The innovative method, developed by the authors, is mostly universal and can be implemented successfully in different types of organisations in individual countries. This provides a solution which can be used to search for opportunities for quantitative evaluation of modern organisations' propensity to change and in this way to improve their crisis sustainability.

Research methodology

The developed model is a tool used to evaluate change management in the organisation and to improve its crisis sustainability, including the process of allocating reserves for its improvement. Identifying the difficult areas makes it possible to formulate a series of decisions for improving the activity in the research area by creating an environment of commitment and trust in people responsible for conducting the changes in the organisation.

The model is based on ideas categorized by Kuzmanova (2012). The development of modern organisations is accompanied by constant changes. Ignoring them can lead to unpredictable unfavourable consequences and conflicts and to threaten the long-term upward development of the organisations. With respect to that particular importance is attached to skills related to conducting planned changes and forecasting their results considering the complex nature of the organisational changes. Special attention should be paid to the study of the following connections and interdependencies: development concept – aims of the changes – crisis sustainability – competencies – results from the changes. The in-depth analysis of the specified links is the basis for taking flexible managerial decisions and enhancing the potential of the modern organisations which is determined by internal factors (marketing, production, finance, research and development, human resources, managerial style etc.). This way the efficient change management is directed towards increasing the potential of the organisation in terms of

the above mentioned factors with the changes in the business environment in mind. To achieve this goal various analysis techniques can be used. (Simeonov, Lambovska, 2012).

The development of the organisation is characterized with continuous change of its competition, consumers, technologies and other framework conditions which influence the results from its performance. In this respect it is of extreme importance to efficient management to conduct constant monitoring and control of the entire system of factors and the closely related to their impact adapting of the organisational structure, strategy and competencies. Along with that, the strategic change has long turned from an exception into a regular managerial procedure which poses a multitude of challenges to the management of the organisation. Overcoming the changes in its surrounding environment and the establishment of its competitive advantages presupposes a continuous desire to achieve flexibility and adaptation in terms of the changing environmental factors.

Thus the considered elements of effective management allow for:

❖ Generating additional opportunities for efficient activity of the organisation focusing on its key competencies.

❖ Timely identification of crisis situations and difficulties in the own business and the competitors' business.

❖ Using to the maximum the market opportunities where the organisation functions or intends to enter.

❖ Timely introduction of new technology norms and standards.

❖ Timely evaluation of important to the organisation social and political changes, including legal regulations, changes in the consumer needs and others.

Elements of the model

Organisations can be structured in different groups according to their skills in the field of change management and enhancement of crisis sustainability. (see Figure 2) The basic option of the matrix includes appropriate metrics which are based on the following elements:

1.   The indicators used to specify the measurable keys to successful change: aim setting, leadership, structure, abilities, culture, organized in Table 1.

2.   Indicators related to the use of change to enhance the crisis sustainability of the organisation.

Figure 1. shows the key elements of the developed model for efficient change management and enhancing the crisis sustainability of organisations.
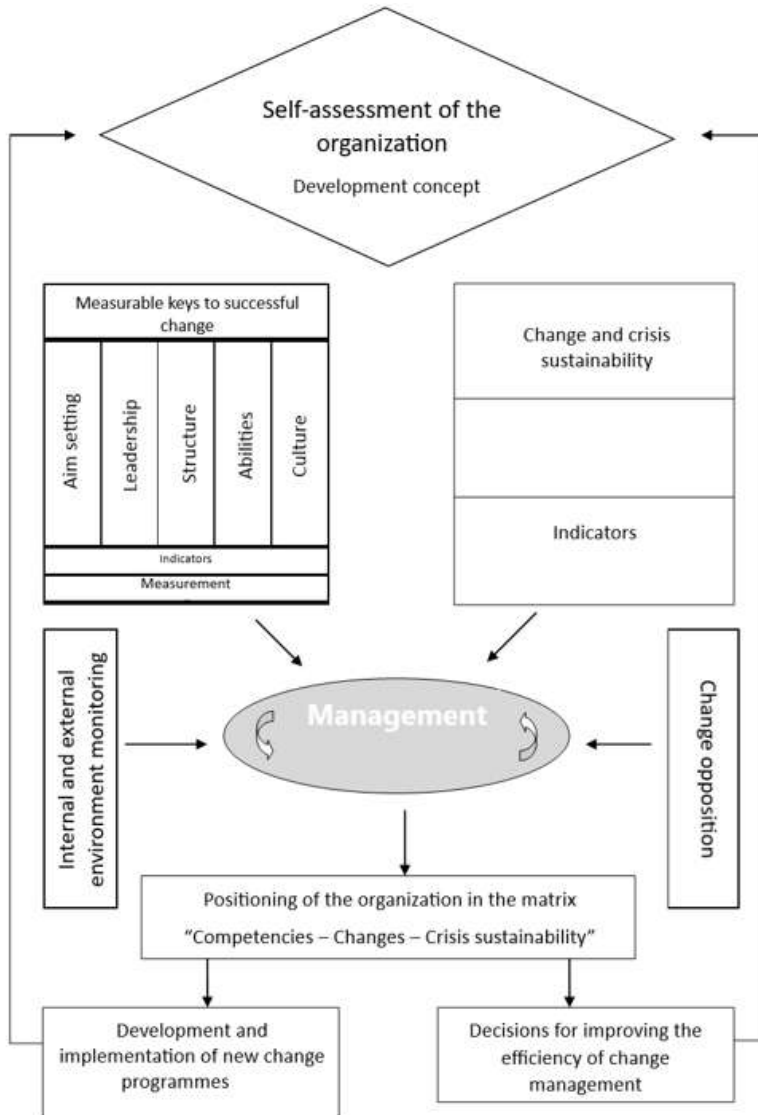
Figure 1. Efficient change management

Table 1. is an indispensable part of the developed model and it presents the structured indicators which specify the measurable keys for successful organisational change and the indicators related to improving the crisis sustainability of the organisation.

Table 1. Indicators used to specify the measurable keys to successful change and improving the crisis sustainability of the organisation

№:	Measurable keys/ Indicators
	Description
	I Using the organisational competencies for change
	1. AIM SETTING
1.1.01.	Active participation of the associates in the process of developing an adequate system of goals to stimulate the desired changes in the organisation.
1.1.02.	Timely identification and interpretation of the signals for change in terms of external and internal environment.
1.1.03.	Monitoring the degree to which the strategic organisational goals are achieved. Continuous analysis of the deviations.
1.1.04.	Developing and using a flexible system of standards in the process of formulating and implementing the system of organisational goals.
1.1.05.	Efficient resource allocation based on clearly defined priorities.
1.1.06.	Binding the material and moral motivation of the people in the organisation with their contribution to achieving the system of organisational goals.
	LEADERSHIP
1.2.01.	**2.** Continuous study of the communication between the manager and the employees in the organisation.
1.2.02.	Managers have a clear vision about the future of the organisation.
1.2.03.	Leaders have outstanding skills, are good at team work and do not panic in times of uncertainty and stress.
1.2.04.	Managers actively support the change initiatives in the organisation.
1.2.05.	Use of new methods to stimulate innovation in the organisation.
	Measurable keys/ Indicators
№:	**Description**
1.2.06.	Managers' skills to successfully involve associates from different hierarchical levels in the change process.
	STRUCTURE
1.3.01.	Structure stands out with flexibility in terms of changes in the environment.
1.3.02.	**3.** Structure facilitates performance aiming to achieve the system of goals in line with the expectations of the main groups of influence on the organisation.
1.3.03.	Structure stimulates innovative decisions in the organisation.
1.3.04.	The organisation employs a well-structured system for delegating rights and for determining the responsibility areas for the changes implemented.
1.3.05.	There is coordination between the decisions and actions of all structural units in the organisation in the process of conducting the changes.
1.3.06.	Structure facilitates the movement of information flows along the horizontal and vertical axis.
	ABILITIES
1.4.01.	Individuals and teams in the organisation are included in active training processes.
1.4.02.	Broad participation of associates in the process of developing and implementing the organisations' development strategy. Delegating rights to lower management levels.
1.4.03.	**4.** Ability of the organisation to manage changes and to shape its own future. Flexible transformations in the organisation.
1.4.04.	Project teams are formed in the organisation to implement the necessary changes
1.4.05.	Continuous strive for more comprehensive use of the knowledge potential and for

	perfection.
1.4.06.	An efficient information and communications system, encouraging changes, functions in the organisation.
	CULTURE
1.5.01.	Culture stimulates innovative decisions and changes.
1.5.02.	Culture facilitates coordination of activities in the organisation in the process of change management.
1.5.03.	The morale in the organisation stimulates experiments and creative ideas.
1.5.04.	**5.** The organisation encourages the efforts of those who develop and implement change programmes.
1.5.05.	The people in the organisation are motivated to participate actively in the dialogue aimed to find balance between stability and changes.
1.5.06.	Risk taking, mistakes and efficient conflict solutions are tolerated.
	Measurable keys/ Indicators
№:	**Description**
	II. Using change to improve the crisis sustainability of the organisation
2.1.	The company enhance the crisis sustainability by using the opportunities in the business environment and the organisation's strengths.
2.2.	Improving business processes in order to minimize the impact of the crisis processes on the organisation.
2.3.	Opportunities to measure the results from the management are sought.
2.4.	The managers support the decisions for change.
2.5.	The management of the development of the organisation is aimed at providing flexibility and improving its crisis sustainability.
2.6.	Conducting policy of improving the activity of the organisation and of enhancing its crisis sustainability.

Source: own elaboration.

The results from the conducted survey are entered into the matrix, shown in Figure 2.

Figure 2. Change management competencies – enhancing crisis sustainability
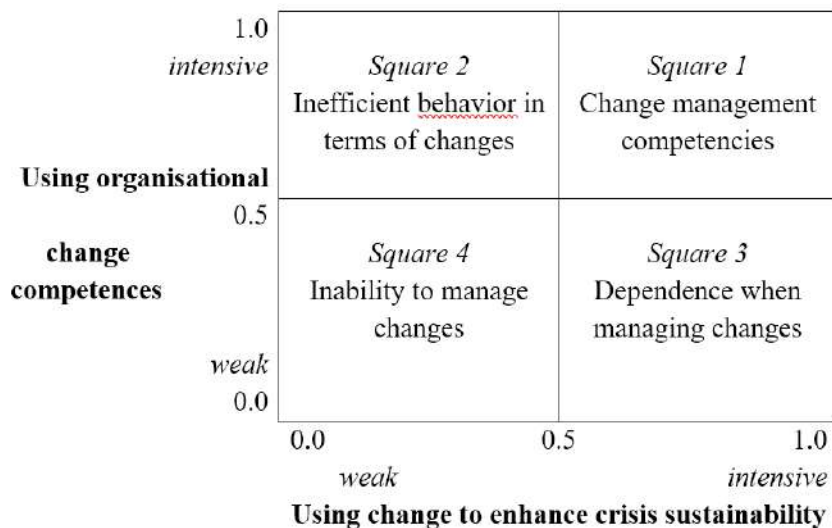
Based on the results from the positioning in the matrix illustrated in Figure 2, organisations can be classified as follows:

- ✓ Organisations incapable of managing change. They use change inactively to enhance crisis sustainability.
- ✓ Dependent organisations – implement change with the help of external consultants. They use change intensively in order to enhance crisis sustainability.
- ✓ Organisations which are inefficient in change management – they are unable to create advantages through implementing changes. They use change inactively to enhance crisis sustainability.
- ✓ Organisations that manage change effectively. They use change intensively to enhance their crisis sustainability.

Taking into consideration managers' skills to direct changes towards enhancing crisis sustainability, the organisations exhibit different behavior. Figure 2. illustrates that only organisations in square 1 can rely on long-term success since they have the necessary competencies to manage change and enhance their crisis sustainability.

Therefore, it is appropriate to conduct a self-assessment which should provide an answer to the following questions:

• In which square of the matrix from Figure 2 can the organisations analysed be positioned?

• What competencies should be developed to manage successfully the strategic changes in the studied organisations? What are the key factors for success?

• What are the sequential steps in the algorithm which will let organisations improve their positions in comparison with the best at change management?

• What difficulties should be overcome in that respect?

• What costs are involved in the above mentioned activities and processes? What is their efficiency? With respect to that it is of great importance to develop controlling – a change management system.

It is possible to deepen the analysis through focusing on the details of the change gene and in this way to conduct analyses and comparisons between the individual structural units of the organisation. On that basis it is possible to identify the strategically important areas for change, development and improvement of the organisations studied.

The survey provides empirical evidence, closely related to the hypotheses formulated in the research:

Hypothesis 1: Organisations in the information and communications technologies sector use intensively the organisational competencies for change?

This hypothesis is related to the response to the "To what degree do organisations in the information and communications technology sector use the organisational competencies for change? question".

Hypothesis 2: Organisations in the information and communications technologies sector use changes intensively to enhance their crisis sustainability.

This hypothesis is related to the response to the "To what degree organisations in the information and communications technologies sector use changes to enhance their crisis sustainability? question".

The main advantages of the developed model can be classified in the following way:

In the first place, innovative approach is used – studying the efficiency of the management system of the organisations and fully using their potential along the triad key competencies – changes – crisis sustainability.

In the second place, the model is used to stimulate changes and to facilitate activities related to enhancing the crisis sustainability of the organisations in times of diverse internal and external changes which accompany their development.

In the third place, the model is to a great extent universal and can be flexibly implemented in different types of organisations, including their individual structural units.

In the fourth place, the focus in the model is on long-term successful development of modern organisations since it helps to provide flexibility and adaptability in the management process.

In the fifth place, the use of the model stimulates the continuous training in the organisation and synchronizing the managerial decisions with the developed system of priorities.

In the sixth place, the model helps synchronize the short-term, mid-term and long-term managerial decisions and reduces the risk of taking wrong decisions.

Along with that some limitations and difficulties related to using the developed model should be pointed out.

Firstly, the implementation of the model requires additional knowledge and skills on the part of managers.

Secondly, there are difficulties related to the development of a single measurement scale.

Thirdly, it is necessary to improve the human resources management and other systems on time.

Survey results

To collect the necessary data a survey was carried out among representatives of businesses performing in the ICT sector by using a representative sample of all enterprises.

In this case the general totality from which the sample of ICT enterprises was made is the Business register of the statistical entities. The general totality includes all working enterprises on the territory of the country whose core activity is in the field of information and communications activities. These enterprises are entered into the Business register of the NSI and their number in 2013 was 11,534.

The main advantage of the representative samples is that they allow for the generalization of the entire general totality (for all enterprises in the ICT sector) on the basis of the conclusions drawn from the research.

The survey included 108 representatives of enterprises in the ICT sector. They perform in enterprises with different form of ownership, as follows: The biggest share is the one of the private enterprises with foreign capital (68.3%); followed by the private enterprises with Bulgarian capital (27.9%). The state-owned/ municipal enterprises have the lowest relative share (3.8%) (see Figure 3.)
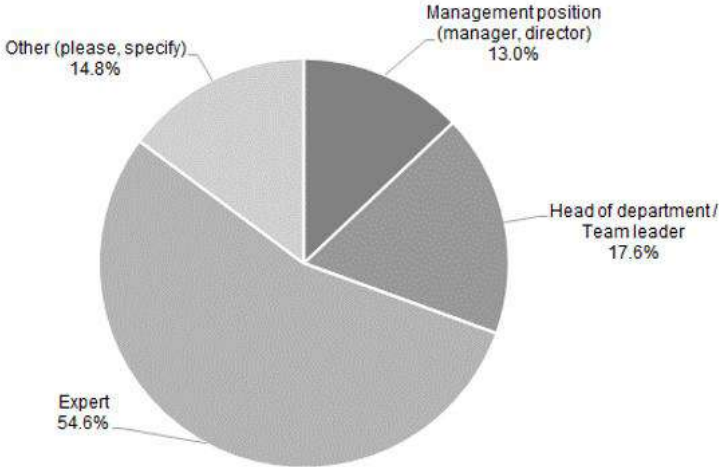
Figure 3. Organizational structure according to the type of ownership
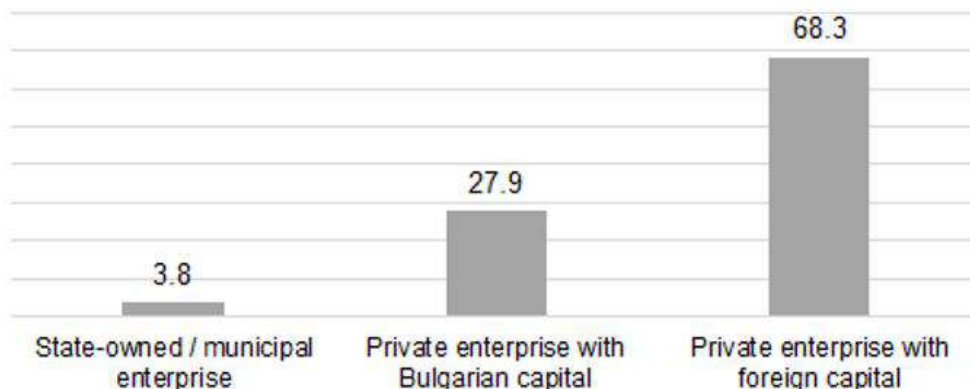
Source: Own calculation

54.6% of the respondents work as experts; 17.6% are team leaders or heads of departments; 13% are top managers and 14.8% marked another role (coordinators, crisis events managers, lecturers, software engineers and other). (see Figure 4.)

Figure 4. Distribution of the respondents according to their position in the organization (%)

The distribution of respondents according to their total work experience is as follows: up to 5 years – 45.4%; from 6 to 10 years – 15.7%; from 11 to 15 years – 17.6%; from 16 to 20 years – 13.0%; over 20 years – 8.3% (see Figure 4)

Figure 5. Distribution of the respondents according to their total work experience (%)
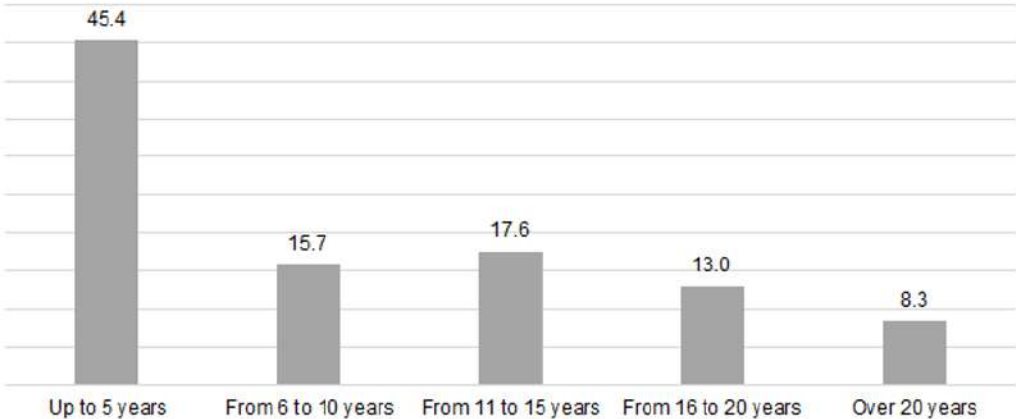
Results related to the model of efficient change management and enhancing the crisis sustainability of the organisations in the information and communications technologies sector

Section G of the questionnaire is dedicated to the model of efficient change management and enhancing the crisis sustainability of the organisations in the information and communications technology sector.

Table 2. illustrates results from the implementation of the "Cronbach's alpha" method for evaluating the consistency of the initial measures in the model. The data presented in the table shows that the calculated values of Cronbach's alpha are close to 1. Therefore, the discussed measures are well selected and it is appropriate to be grouped by common indicators.

Table 2. Results from the application of the "Cronbach's alpha" method for evaluating the correlation of the initial measures in the model

№	Measure	Cronbach's alpha
G1	Aim setting	0.728
G2	Leadership	0.778
G3	Organisational structure	0.891
G4	Abilities	0.879
G5	Culture	0.874
G1_G5	*Grouping of measures*	0.854
G6	Use of changes to enhance crisis sustainability of organisations	0.887

Source: Own calculation

Table 3. illustrates the distribution of respondents based on their understanding of aim setting as an element of the gene of change discussed earlier in the article. The results in the table show that the respondents support the activities related to creating preconditions for change management in their organisations in terms of aim setting to a very great extent: the support in all its aspects exceeds 80%. Just 0.9% of the respondents have marked "Completely disagree", related to "Monitoring the degree of completion of the organisation's strategic goals. Continuous analysis of the deviations". The "Completely disagree" answers vary within the 1.9 – 8.4% range.

Table 3. Distribution of respondents according to their understanding of aim setting (%)

№	Statement	Completely agree	Mostly agree	Undecided	Mostly disagree	Completely disagree	Total
A	Active participation of associates in the process of developing an adequate system of goals to stimulate the desired changes in the organisation.	30.8	52.3	8.4	8.4		100.0
B	Timely identification of the signals for change in terms of external and internal environment.	29.9	57.9	10.3	1.9		100.0
C	Monitoring the degree of implementation of the organisation's strategic goals. Continuous analysis of the deviations.	38.3	45.8	8.4	6.5	0.9	100.0
D	Development and use of a flexible system of standards in the process of formulating and implementing the system of goals of the organisation.	30.8	46.7	16.8	5.6		100.0
E	Efficient resource allocation based on clearly defined priorities.	43.9	43.9	7.5	4.7		100.0
F	Binding the material and moral incentives for the people in the organisation with their contribution to achieving the system of goals of the organisation.	48.1	39.6	7.5	4.7		100.0

Source: Own calculation

The analysis of the results in Table 4. also confirms the relatively big support on the part of the respondents for the statements related to leadership as an element of the gene of change in the organisations under consideration. The number of answers "Completely agree" fluctuates within the 38.0 – 60.2% range. The share of respondents who said "Mostly disagree" is relatively small (between 2.8 and 7.4%). Only 0.9% is the share of respondents who gave "Completely disagree" answer for the statement "Management has a clear vision for the future of the organisation".

Table 4. Distribution of respondents based on their understanding of leadership (%)

№	Statement	Completely agree	Mostly agree	Undecided	Mostly disagree	Completely disagree	Total
A	Continuous study of the leader-employee communication in the organisation.	38.0	44.4	11.1	6.5		100.0
B	Management has a clear vision about the future of the organisation.	39.8	43.5	8.3	7.4	0.9	100.0
C	Leaders have outstanding qualities, are good at team work and do not panic in times of uncertainty and stressful situations.	60.2	30.6	6.5	2.8		100.0
D	Management actively supports the initiatives for change in the organisation.	40.7	46.3	8.3	4.6		100.0
E	Use of new methods to stimulate innovation in the organisation.	39.8	44.4	12.0	3.7		100.0
F	Managers' skills to involve successfully employees at different hierarchical levels in the change process.	52.3	33.6	8.4	5.6		100.0

Source: Own calculation

When analysing the results in Table 5. we should point out that there is a variety in the answers given by the respondents. However, the positive answers prevail. There are no "Completely disagree" answers. The values of the "Mostly disagree" answer vary between 9.3% ("The structure facilitates the working process in terms of achieving the system of goals in line with the expectations of the main groups of influence on the organisation.") and 17.6% ("The structure stimulates innovative decisions in the organisation."). The agreement in the opinions of the respondents is comparatively big: more than 60% of the respondents expressed their support for the statements in the questionnaire.

Table 5. Distribution of respondents based on their understanding of corporate organisational structure (%)

№	Statement	Completely agree	Mostly agree	Undecided	Mostly disagree	Completely disagree	Total
A	The structure stands out with flexibility in terms of changes in the environment.	25.9	49.1	12.0	13.0		100.0
B	The structure facilitates the working process in terms of achieving the system of goals in line with the expectations of the main groups of influence on the organisation.	30.6	39.8	20.4	9.3		100.0
C	The structure stimulates innovative decisions in the organisation.	29.6	38.0	14.8	17.6		100.0
D	The organisation boasts a well-organized system of rights delegation and of defining the areas of responsibility in terms of the changes conducted.	34.3	38.9	14.8	12.0		100.0
E	There is coordination between the decisions and the actions of all structural units in the organisation in the process of conducting the changes.	29.6	38.0	20.4	12.0		100.0
F	The structure facilitates the movement of information flows along the horizontal and vertical axis.	33.3	33.3	23.1	10.2		100.0

Source: Own calculation

Table 6. presents the distribution of respondents based on their understanding of the abilities of the employees as an element of the gene of change in the organisations under consideration. The analysis of the results leads to the conclusion that positive responses prevail although there are various opinions about the discussed measure. 85.2% of the respondents support the statement "An efficient information and communications system functions in the organisation and it facilitates the changes." The responses "Mostly disagree" and "Completely disagree" vary between 7.4 ("The organisation operates an efficient information and communications system which facilitates changes.") and 21.3% ("The organisation conducts intensive training of individual associates and teams.").

Table 6. Distribution of respondents based on their understanding about abilities (%)

№	Statement	Completely agree	Mostly agree	Undecided	Mostly disagree	Completely disagree	Total
A	The organisation conducts intensive training of individual associates and teams.	32.4	39.8	6.5	19.4	1.9	100.0
B	Active participation of associates in the process of developing and implementing the strategy for organisational development. Delegating rights to lower management levels.	32.4	39.8	6.5	19.4	1.9	100.0
C	Ability of the organisation to manage changes and to shape its own future. Flexible transformations in the organisation.	33.3	44.4	12.0	9.3	0.9	100.0
D	Project teams are formed in the organisation to implement the necessary changes.	36.1	31.5	14.8	17.6		100.0
E	Constant strive for wider use of the knowledge potential and for perfection.	42.1	37.4	10.3	9.3	0.9	100.0
F	The organisation operates an efficient information and communications system which facilitates changes.	45.4	39.8	7.4	7.4		100.0

Source: Own calculation

The same goes for culture as an element of the index of change in the organisations (see Table 7.). The values of the "Completely disagree" response change within the 0 ("Culture stimulates innovative decisions and changes.") and 3.7 ("People working in the organisation are motivated to participate actively in the dialogue aimed at finding balance between stability and changes.") range. The share of respondents who support the statements referring to culture is big: from 58.3% ("Desire to stimulate experiments and creative ideas dominates in the organisation.") to 78.7% ("Culture stimulates innovative decisions and changes.").

Table 7. Distribution of respondents based on their understanding about abilities (%)

№	Statement	Completely agree	Mostly agree	Undecided	Mostly disagree	Completely disagree	Total
A	Culture stimulates innovative decisions and changes.	40.7	38.0	8.3	13.0		100.0
B	Culture facilitates the coordination of activities in the organisation in the process of change management.	38.9	38.0	13.9	9.3		100.0
C	Desire to stimulate experiments and creative ideas dominates in the organisation	21.3	37.0	17.6	22.2	1.9	100.0
D	The organisation stimulates the efforts of people who develop and implement change programmes.	40.7	28.7	14.8	14.8	0.9	100.0
E	People working in the organisation are motivated to participate actively in the dialogue aimed at finding balance between stability and changes.	32.4	38.0	9.3	16.7	3.7	100.0
F	There is tolerance towards risk taking, mistakes and efficient conflict resolution.	33.3	41.7	7.4	16.7	0.9	100.0

Source: Own calculation

Table 8. illustrates the distribution of respondents based on their understanding of the use of changes to enhance the crisis sustainability of the organisations. It becomes clear from the results in the table that despite the variety of opinions, positive answers prevail. More than 60% of the respondents expressed their support for the statements included in the table. There are no "Completely disagree' responses. "Mostly disagree" answers are in the range between 5.6% and 11.1.%.

№	Statement	Completely agree	Mostly agree	Undecided	Mostly disagree	Completely disagree	Total
A	The company improves the crisis sustainability by using the opportunities of the business environment and the strengths of the organisation.	37.0	38.9	13.9	10.2		100.0
B	Improving business processes in order to minimize the impact of crisis process on the organisation.	20.4	55.6	16.7	7.4		100.0
C	Opportunities to measure the results from the management are sought.	36.1	31.5	21.3	11.1		100.0
D	The managers support the decisions for changes.	38.0	47.2	9.3	5.6		100.0
E	The management of the development of the organisation is directed towards providing flexibility and improving its crisis sustainability.	38.0	43.5	11.1	7.4		100.0
F	Conducting a policy of improving the activity of the organisation and enhancing its crisis sustainability.	28.7	43.5	19.4	8.3		100.0

Source: Own calculation

Table 9. shows the correlation coefficients between the measurements of the gene of change (aim setting, leadership, organisational structure, abilities and culture) and the degree to which changes are used to enhance crisis sustainability of the organisations in the information and communications technologies sector.

Given the values of the correlation coefficients the following conclusions can be drawn:

➢ There is a relatively strong, direct and statistically material relation between G1 (aim setting) and G6 (the degree at which changes are used to enhance crisis sustainability of the organisation).

➢ There is a relatively strong, direct and statistically material relation between G2 (leadership) and G6 (the degree at which changes are used to enhance crisis sustainability of the organisation).

- ➢ There is strong, direct and statistically material relation between G3 (organisational structure) and G6 (the degree at which changes are used to enhance crisis sustainability of the organisation).
- ➢ There is strong, direct and statistically material relation between G4 (ability) and G6 (the degree at which changes are used to enhance crisis sustainability of the organisation).
- ➢ There is strong, direct and statistically material relation between G5 (culture) and G6 (the degree at which changes are used to enhance crisis sustainability of the organisation).
- ➢ There is strong, direct and statistically material relation between G1_G5 (unification of the measures of the gene of change) and G6 (the degree at which changes are used to enhance crisis sustainability of the organisation).

Table 9. Correlation coefficients* between the measures of the gene of change and the degree at which changes are used to enhance the crisis sustainability of organisations.

№	Measure	Using changes to enhance crisis sustainability
G1	Aim setting	0.361
G2	Leadership	0.474
G3	Organisational structure	0.746
G4	Abilities	0.744
G5	Culture	0.688
G1_G5	*Grouping the measures*	0.775

Source: Own calculation

* Note: These are the Spearman rank correlation coefficients measured within the [-1, +1] interval. They are used to measure the degree of dependence between two variables (based on the absolute value of the coefficient).

The results presented in Table 10. provide arguments in favour of hypothesis 1 and hypothesis 2, depicted above.

Table 10. The mean values of the measures of the gene of change and of the use of change to enhance crisis sustainability of organisations

№	Measure	Mean values
G1	Aim setting	0.790
G2	Leadership	0.813
G3	Organisational structure	0.721
G4	Abilities	0.732
G5	Culture	0.720
G1_G5	*Using organisational competencies for change*	*0.755*
G6	**Using changes to enhance the crisis sustainability of organisations**	**0.753**

Source: Own calculation

It becomes clear from the information in Table 10. that the mean values of the measures of the gene of change of organisations in the information technologies sector change in the range between 0.720 (culture) to 0.813 (leadership). This, on its part, is a proof for the existence of good practices related to using the organisational competencies for changes.

The value of the "Use of organisational competencies for changes" indicator is 0.775. The value of the second indicator "Using changes to enhance the crisis sustainability of organisations" is 0.753 (see Table 10.). This means that the organisations in the information and communications technologies sector can be positioned in square 1 of the matrix "Competencies for change management – enhancing crisis sustainability" (see Figure 2. above in the body of the article, pp. 135 – 136). This leads to the conclusion that the discussed organisations have competencies for change management, i.e. they use intensively the organisational competencies for change and through changes they enhance their crisis sustainability.

Conclusions

Generally, a new approach should be used in the management theory and practice related to change management as an instrument used to improve the organisations' crisis sustainability:

- Change management is subject to the task related to the transition from reactive to proactive approach to coordinating activities related to it.
- Change management involves the acquisition of various knowledge related both to the theoretical models needed for its realization and to its practical implementation.

- A direct connection exists between the success of crisis management and change management.
- Change management is aimed at integrating the individual change projects in a wide-range balanced programme with clearly defined priorities and rational management of technologies, processes and human resources.

It should be pointed out that essential changes in the business environment and internal variables are typical of modern organisations, which calls for implementing flexible strategies for change management and enhancing their crisis sustainability. Moreover, the creation and maintenance of key competencies, which facilitate the change processes and provide balance in the long-term development, are of great importance. A flexible model was developed and it can be used to look for opportunities to define measurable keys to successful changes in modern organisations and on that basis to enhance their crisis sustainability.

The conducted research provides arguments in favour of hypothesis 1 and hypothesis 2, depicted above. The organisations in the information and communications technologies sector are positioned in square 1 of the "Change management competencies" – "Using change to improve crisis sustainability" matrix, and namely "Active use of change in order to improve crisis sustainability". Therefore, they possess of good practices related to using the organisational competencies for changes and through changes they enhance their crisis sustainability. It is recommended that in the future the model be approbated in organisations in other sectors of the economy. This will allow for making comparisons and posing important questions and making decisions related to their activity in the field of change management and anti-crisis management.

Modern organisations face various challenges in the field of change management and enhancing their crisis sustainability. Therefore, the role of crisis decisions related to forecasting, slowing down and mitigating the crisis (an event that considerably endangers profitability, the reputation and the regular functioning of the organisation) grows; by providing opportunities for managing the processes of overcoming the crisis and minimizing its adverse consequences and so on. In this way the successful development requires the development and the successful implementation of a modern management concept where the key role belongs to activities in the field of change management as an instrument used to enhance the crisis sustainability of modern organisations.

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