

INNOVATION MANAGEMENT AND AGILE STRATEGIES FOR CHANGE

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Abstract:

The importance of innovation management and agility is growing both in practice and in academia. This paper provides a current overview of the existing body of the literature in the field of innovation management. The main objective of the paper is to provide and to test the Co³MDI model (co-creation, co-operation, co-ordination) as an embedded element of the agile strategies for change. The aim of the model is to help businesses to develop their innovation management activities as a business agility plan to approach change confidently. Research questions driving this paper are: 1/ to identify change determinants and drivers for Bulgarian SMEs; 2/ to evaluate the innovation management practices of Bulgarian SMEs and 3/ to identify the possibilities to apply innovation to foster agility employment in organisational strategic process. The research study, based on a survey of Bulgarian SMEs, concludes that there is a gap between what is expressed as a strategy for change by the managers and what is actually implemented. It is confirmed that there is an inherent tension between the conservation of existing practices and behaviors, on the one hand, and innovation or transformation strategies, on the other hand, i.e. Bulgarian firms are willing to initiate a change in order to improve their competitive position but focusing on “wrong” development determinant such as decreasing costs and relying mainly on internal resources.

Keywords: innovation management, agile strategies, innovation models, change determinants

1. INTRODUCTION

While business is getting more complex, the environment and markets are becoming more turbulent and unpredictable. Many companies and their managers realize that the world is in a constant and relentless state of change. Despite some doubts toward the efficiency of the strategies for change (Ronnell, 2005) the majority of the academics and practitioners suggest that these strategies should be planned, but managers and employees have to recognize emergence and have the adaptability to change. The shortening of the business model lifecycles in many industries leads to greater frequency of disruption and dislocation (Lindgardt et al., 2009). Both time pressure and capability to change are becoming a crucial factor for company survival. And as Drucker (1988) argues: ‘the idea of organizational permanence is a myth and organizations would have to become more flexible and adaptive.’ Companies should embrace a new core competency: agility (Browning, Duffy & Linde, 2008: p. 3). Many authors and researchers (Andrew et al., 2009; Cuthbertson et al., 2015; Enriquez et al., 2015) suggest that vigorous innovation is essential for economic growth and social progress on a global scale. According to the latest report of ITIF (2016, p. 1) “... for the world to maximize global innovation capacity, it will need to develop stronger mechanisms to encourage nations to do more contributing and less detracting.” Research questions driving this paper are: 1/ to identify change determinants and drivers for Bulgarian SMEs; 2/ to evaluate the innovation management practices of Bulgarian SMEs and 3/ to identify the possibilities to apply innovation to foster agility employment in organisational strategic process.

2. INOVATION MANAGEMENT AND AGILE STRATEGIES TO CHANGE: THEORETICAL BACKGROUND

According to McKinsey (2015: pp. 2-3) there are three sets of forces that will shape the global economy over the coming decade. The first set comprises near-term forces – stimulus policies and shifting energy markets, which affect the global economy on a daily basis. The second set of forces – urbanization and aging, generate structural challenges. The magnitude of the third set – technological innovation and global connectivity, is uncertain and changeable. Dealing with highly turbulent development of technological innovation becomes a challenge for the business as a whole.

2.1. Innovation models and innovation management

A vast amount of literature investigates the innovation process and its management (Birkinshaw et al., 2008; Nonaka & Kenney, 1991; Riederer et al., 2005; Rothwell, 1992). However, the main emphasis of academic research and practitioners’ insights is placed on the phases of the innovation process from idea generation to commercialization of new products (Cooper, 1994, 1996; Cooper & Kleinschmidt, 1986, 1990, 1991; Trott, 2005; Tidd et al., 1998). Several authors (Du Preez & Louw, 2008; Verworn & Herstatt, 2002) explored the evolution of innovation models in details. A concise review is provided in Table 1.

Table 1: Evolution of innovation models

Generation of innovation processes	The core of the innovation process	Model of innovation process	Focus	Main characteristics	Type of the innovation process	Time period
1G	Push-pull	Technology push	R&D	Linear sequential process; engineering driven	phase-review-processes	1960s
		Market pull	Marketing			
2G	Interaction	Coupling model	Interaction between the elements and feedback loop	Integration of elements	stage-gate-process (NPD)	1970s and 1980s
		Interactive model	Combination of push and pull; external linkages			
3G	Knowledge and learning	Network model	Knowledge accumulation and external linkages	Integration of systems; intra-entra interaction	parallel and simultaneous stage-gate-process; value proposition	1990s
		Open innovation	Combination of external and internal paths to			

			market plus technology		cycle	
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Source: Adapted by: Du Preez & Louw, 2008, p. 2; Rothwell, 1992; Verworn & Herstatt, 2002, pp. 3-6.

Note: NPD – New Product Development

Du Preez & Louw (2008) suggested a classification of innovation models in six generations while Verworn & Herstatt (2002) divided the evolution of innovation models into phase-review-process models (referred as first-generation models) and second- and third-generation stage-gate-process models. They further outline a division between descriptive and normative innovation process models. The categorization of innovation process models presented in Table 1 delineates their generation according to the core of the innovation process explained by the corresponding model: 1/ direction (push-pull), 2/ interaction and 3/ knowledge and learning. The generation of the models corresponds directly to the specifics of the planning process employed by the enterprises. The 1G and 2G models are applied by companies with sequential planning process while 3G models require concurrent planning process and consistent innovation management. The latter is applied by agile organizations. Riederer et al. (2005: p. 37) emphasized on the following two approaches (investigated by Smith, 2005) which incorporate the innovation process itself and explore aspects of the sources of innovative ideas, external inputs and users of innovation: 1/ the “object approach” - with a focus on important technological innovations, and 2/ the “subject approach”, focusing on the innovating agent. Anticipating the logic of these approaches the following categorization of innovations is proposed.

1. Innovation object (Pavitt, 1984: p. 354):
 - Science based
 - Scale intensive
 - Specialized supply chain
 - Supply chain dominated
2. Innovation subject:
 - Product
 - Service
 - Hybrid
 - Process
 - Method (Business model)
 - Business functions (HR, Marketing, Financial, Management)
3. Rate of change:
 - Incremental innovation
 - Radical innovation

While discussing different theoretical approaches toward innovation Sundbo (1997: 435-436) identifies three paradigms of innovation – technology-economic, entrepreneur (entrepreneurship) and strategic innovation paradigm. The last one emphasizes the company's strategy as the core innovation determinant and reflects the market pull model of innovation process. The methodology of present paper is developed in the context of strategic innovation paradigm.

2.2. Connecting agile strategies and innovation management

Traditionally, change has been explored at the level of the organisation or industry, but it has been argued that a more micro-level analysis is necessary in order to gain a fuller understanding of the dynamics of strategic change (Johnson et al., 2003; Wilson and Jarzabowski, 2004; Whittington, 2004). According to the results of several research among CEOs conducted during the last few years companies react to the changing environment using crunch or agile management. Crunch management is used primarily in IT industry where the PLC is quite short and timing of the commercialization of the new products is crucial. Agility management is better suited to strategic innovation management. The six principles of agility include the following activities: 1/ establish leadership, 2/ create case for change, 3/ build partnerships, 4/ contextualise and prioritise solutions, 5/ mobilise capabilities and 6/ ensure continuity. The application of the first two principles covers the design phase (see 3.1) of strategic innovation management. The next two are part of the “direct” phase, while the last two comprise the “develop” phase of strategic innovation management.

PwC 11th Annual Global CEO Survey (2008) shows that executives around the world are giving their companies high marks when it comes to change. Of the 1,150 global CEOs responding, 76% said that their ability to adapt to change will be a key source of competitive advantage in the coming year. The initiatives mentioned include M&A activities, reorganizing key business functions or implementing new

business models and processes, thus demonstrating an ability to respond well to change, but that isn't the same as the ability to anticipate or proactively create it. In order to survive and to defend their competitive positions companies must regain the right balance of standardization and flexibility and build strategic and operational agility into their business foundations (Browning et al., 2008: p. 3). The standardization vs. flexibility debate within the agility framework often leads to product standardization–differentiation dilemma. Since agility is defined generally as “the strategic mix of standardization and flexibility, targeted at those organizational pressure points where they're not only needed today, but will most likely be needed tomorrow” (Browning et al., 2008: p. 5) business leaders and managers should be able to plan optional scenarios to anticipate dynamic environmental changes. These scenarios could serve as a background for implementation of strategic patterns in response to market shifts without any internal structural changes. However, under the constant pressure of highly competitive environment the main focus of the companies is to minimize the costs (e.g. through economies of scale). Economies of scale can be achieved by standardization and global consistency which in turn means less flexibility. Such a contradiction could be resolved after a detailed assessment of market factors related to consumers, predominant industry business model and competition.

3. METHODOLOGY AND RESULTS

Based on the literature review and author's previous research (Vassileva et al., 2009: p.316) a conceptual model of agile innovation management is developed. It captures the emerging debates around innovation management and agile strategies for change. Anticipating the logic of the model the following research questions are defined for the empirical study: 1/ to identify change determinants and drivers for Bulgarian SMEs; 2/ to evaluate the innovation management practices of Bulgarian SMEs and 3/ to identify the possibilities to apply innovation to foster agility employment in organisational strategic process. The empirical analysis is done on data collected through longitudinal representative study among the managers/CEOs of Bulgarian SMEs. The study is conducted twice – in July 2010 and in June 2015. The first study is used as a pilot study, mainly to test the questionnaire. Several in-depth interviews with managers from different industries are done to refine the questionnaire. The modified questionnaire was sent to representative sample of Bulgarian SMEs in June 2015. A total number of 325 returned questionnaires were analyzed. Data were recorded, filled, and processed using SPSS 19.0.

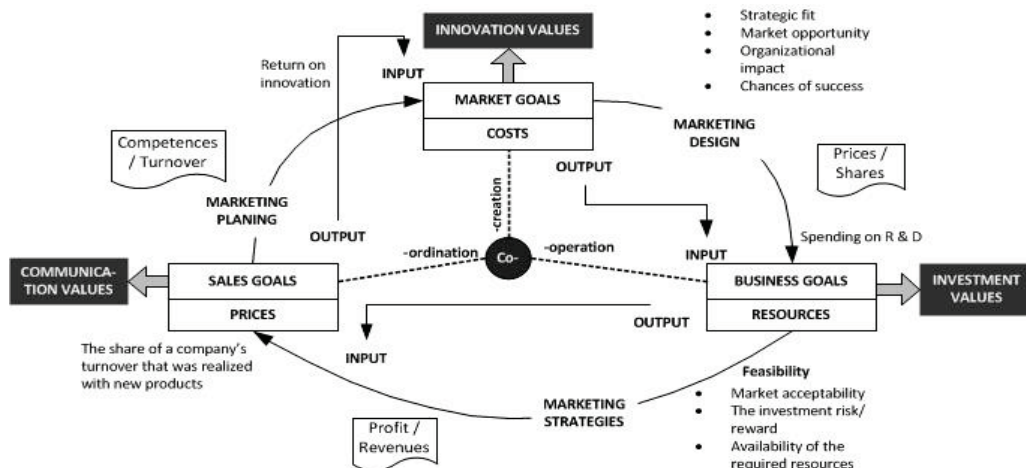
The questionnaire consists of five sections and a demographic part. The first section explores market orientation of companies. The second section focuses on the importance of the problems faced by Bulgarian SMEs. The strategies for change are investigated in section 3 of the questionnaire. The fourth section deals with competitive positions of Bulgarian SMEs, their competitiveness as well as the status quo and potential of product and technological. The last section presents the attitudes of the managers toward the influence of macro marketing environment factors in Bulgaria. The analysis is done using χ^2 -test, t-test, t-test for paired samples and non-parametric ANOVA.

3.1. Conceptual model

This section presents the Co³MDI model¹ (co-creation, co-operation, co-ordination) which is developed as a framework of the innovation management as an embedded element of agile strategies. The aim of the model is to help businesses to develop their innovation management activities as a business agility plan to approach change confidently.

Picture 1: Co³MDI conceptual model

¹ Details about MDI (Marketing Development Index) methodology can be found in Vassileva et al. (2009).



Co³MDI model reflects the innovation management as self-generating and self-renewing process of organizational development in extremely dynamic environment. The first phase (co-creation) represents the process of market opportunity identification and its transformation into organizational development capabilities. After the completion of the first phase company should be able to exploit its resources properly in order to utilize the opportunities (second phase). This transformation process “moves” the organization to the next stage which represents the interactions “... which can lead the system to spontaneous self-organisation...” (van Eijnatten and Putnik, 2004, p. 419). The main constructs of the model are based on the components of the strategic marketing process (market-business-sales goals/costs-resources-prices) and the corresponding change determinants and drivers (innovation-investment-communication values).

3.2. Results and Discussion

Demographic profile of analyzed companies

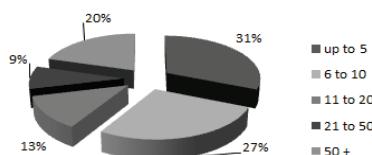
Analyzed companies operate in the following business field: manufacturing (38.4%), trade (29%), services (26.1) and other (5.1%). The competitive profile of analyzed companies (Table 2) shows that Bulgarian SMEs operate in dynamic competitive environment. Two thirds (73.7%) of them face a competitor with market share above 5%.

Table 2: Competitive profile

Metrics	< than competitors'	Almost the same	> than competitors'
Type of clients, %	14.6	59.2	26.2
Number of clients, %	17.0	34.0	49.0
Size of the clients, %	10.8	53.8	35.5

During the last 3 years half of the companies (55.8%) confronted market entry of a competitor with market share above 5%. As a response to competitive pressure the majority of companies (79.2%) are trying to keep their prices below the competitors' prices.

Picture 2: Number of competitors, distribution of respondents' answers, %



Identification of change determinants and drivers of Bulgarian SMEs

The identification of change determinants and drivers of Bulgarian SMEs is based on the correlation analysis of horizontal and vertical marketing audit metrics. Sixteen horizontal and nine vertical metrics

(section 5 of the questionnaire) are evaluated by respondents regarding their effect on their companies on scale from -5 (strong negative) to +5 (strong positive) (0 for neutral effect).

Table 3: Horizontal and vertical marketing audit analysis, t-test for paired samples, p-values

	VA1	VA2	VA3	VA4	VA5	VA6	VA7	VA8	VA9
HA1	n.r.	n.r.	0.01018	0.01018	0.00061	0.00112	n.r.	n.r.	n.r.
HA2	0.00009	n.r.	n.r.	0.02436	n.r.	n.r.	n.r.	n.r.	n.r.
HA3	n.r.	n.r.	n.r.	n.r.	0.00005	n.r.	n.r.	n.r.	n.r.
HA4	n.r.	0.02013	0.00009	0.00001	0.00157	0.00005	0.04915	n.r.	n.r.
HA5	0.00005	0.00069	n.r.	n.r.	0.00192	0.00127	n.r.	n.r.	n.r.
HA6	n.r.	0.00085	0.00679	n.r.	n.r.	0.04746	n.r.	n.r.	n.r.
HA7	0.03401	0.02746	n.r.	n.r.	n.r.	n.r.	n.r.	0.01570	n.r.
HA8	0.01099	0.00150	0.00001	n.r.	0.00001	0.00024	0.00010	0.00004	n.r.
HA9	n.r.	n.r.	n.r.	n.r.	0.00001	0.00008	n.r.	n.r.	n.r.
HA10	0.00444	n.r.	n.r.	n.r.	n.r.	n.r.	n.r.	0.03014	n.r.
HA11	n.r.	0.00075	n.r.	0.00754	0.00001	0.00001	0.00076	n.r.	n.r.
HA12	n.r.	0.01269	n.r.	n.c.	0.00541	0.00001	n.r.	0.02813	n.r.
HA13	n.r.	0.00007	0.00956	0.00182	0.00001	0.00017	n.r.	n.r.	0.01022
HA14	n.r.	0.00001	0.00025	0.02042	0.00211	0.00014	0.00027	0.00046	0.00051
HA15	n.r.	n.r.	0.00001	0.01245	0.00001	0.04181	0.00001	0.00001	0.00304
HA16	n.r.	n.r.	0.00001	0.01685	0.02639	0.00004	0.00001	0.00001	0.00001

Note: Political stability (HA1), Tax policy (HA2), Level of market liberalisation (HA3), Inflation rate and growth (HA4), Interest rate level and growth (HA5), Volume and growth of substitutes (HA6), Price change at eco improvements (HA7), Capital structure and ownership (HA8), Channel size and growth (HA9), Competitive products portfolio (HA10), Relation marketing – company goals (HA11), Company positioning (HA12), Marketing costs (HA13), Market absorption (HA14), Sales volume and sales intensity (HA15), Market growth/Market share (HA16); Drop out or modified products (VA1), Product differentiation/standardization (VA2), Product quality/price (VA3), Market/price change (VA4), Marketing coverage of channels (VA5), Channel power (VA6), Sales volume/profit (VA7), Profit per turnover unit (VA8), Advertising budget/costs (VA9)
n.r. – Null hypothesis not rejected

Table 3 presents p-values only for those pairs of metrics for which the null hypothesis is 'rejected'. It can be concluded that the most sensitive to external effects are channels (measured by marketing coverage of channels and channel power) followed by product (measured by product differentiation/standardization). Hence, products and channels are the main innovation areas for Bulgarian SMEs. Advertising budgets are affected only by market-related and sales-related factors. On contrary, the decisions to drop out or to modify products are affected by macro-factors such as tax policy, interest rates, ecological pressure, capital structure and competitive products portfolio.

Going back to product standardization–differentiation dilemma the results show that the managerial decisions are affected by the following macro factors: 1/ inflation rate and growth, and 2/ interest rate level and growth. At industry level they are influenced by: 1/ capital structure and ownership, 2/ market absorption (e.g. market maturity), 3/ volume and growth of substitutes, and 4/ company positioning. As it was pointed out above, decision making at micro level is focused predominantly on costs and price-based competitiveness incl. price change at eco improvements. Such short-term oriented approach doesn't provide a stable background for continuous innovation management. The values of Cramer's V^2 suggest moderate correlation for presented results. The correlation coefficient varies from 0.33189 to 0.54107.

Evaluation of innovation management practices of Bulgarian SMEs

Innovation management practices of Bulgarian SMEs are evaluated twice – in 2010 and 2015 (Table 4). Quality is ranked as the key factor contributing to competitive position of analyzed companies. Technology is evaluated as a second rank in 2010 but it is replaced by price in 2015 (3rd place in 2010). Implementation potential of products is the third factor by its importance in 2015 which confirms the conclusion outlined above.

² Due to limited paper length the Cramer's V values are not presented here but they are available by the author under request.

Table 4: Innovation management practices of Bulgarian SMEs, 2010 and 2015

Metrics	2010						2015					
	1-2	3	4-5	Mean	St. dev.	Rank	1-2	3	4-5	Mean	St. dev.	Rank
Product innovation	34.2	24.4	41.4	3.146	1.424	10	25.8	34.4	39.8	3.156	1.220	11
Comparative product innovation	23.1	30.8	46.1	3.308	1.280	8	23.8	24.6	51.6	3.357	1.203	7
Implementation potential of products	20.0	22.5	57.5	3.575	1.238	4	8.2	25.2	66.7	3.919	1.053	3
Technological innovation	40.0	37.5	22.5	2.850	0.921	11	27.3	30.6	42.2	3.182	1.211	10
Comparative technological innovation	22.5	35.0	42.5	3.350	1.145	6	21.9	33.6	44.5	3.261	1.189	8
Technological process capabilities	25.6	25.6	48.8	3.308	1.173	7	12.4	28.3	59.3	3.637	1.094	4
Level of required export resources	33.4	18.2	48.4	3.212	1.453	9	34.5	17.3	48.2	3.185	1.517	9
Competitiveness:												
▪ Technology	15.4	20.5	4.1	3.744	1.093	2	20.0	27.8	52.2	3.452	1.157	6
▪ Market share	25.0	20.0	55.0	3.525	1.301	5	14.8	36.1	49.1	3.508	1.062	5
▪ Price	23.1	10.3	66.7	3.615	1.369	3	8.3	19.8	71.9	3.950	1.023	2
▪ Quality	13.5	10.8	75.6	4.027	1.118	1	2.4	12.2	85.4	4.260	0.828	1

Note: Scale from 1 (Low importance) to 5 (High importance)

The stage of the business life cycle affects the innovation management practices of Bulgarian SMEs. At the early stages (Start-up and Growth) of their development companies predominantly focus on product innovation and the implementation potential of their products, followed by technological innovation and price- and quality-based competitiveness. Unfortunately, technological innovation is not considered as important during the next stages of SMEs' development. One of the possible explanations is based on the suggestion that technology innovation and technology-based competitiveness are important only company decides what kind of technology to use as a business foundation which is part of the preliminary investment decisions. Established companies and those in expansion prefer to compete on quality. The next two drivers by their rank are the same for both type of companies. Established companies continue to invest in implementation potential of their products (especially when the products are still in the growth phase of their life cycle). Price-based competitiveness is placed on third position. Expanding companies evaluate price-based competitiveness with second rank followed by the implementation potential of their products.

The ranking of analyzed metrics differs slightly for micro companies compared to small and medium-sized companies. Quality-based competitiveness is ranked as the most important by all respondents regardless of the size of their companies. Price-based competitiveness is placed on the second position by micro companies. Small and medium-sized companies consider the implementation potential of company products as the second important metric. The later is evaluated on third position by its importance from micro companies. Small companies consider price- and market share-based competitiveness as third important metric while for medium-sized companies rank on that position the implementation potential of their technological process.

Quality-based competitiveness is the leading driver for Bulgarian SMEs regardless the industry and type of the market. Their strategy on the national market is the only exception because the price is the main competitive tool. Food industry and chemistry consider the capabilities of their technological process quite important. The same is valid for all companies operating on the international markets. Price is ranked on the second position by the respondents from the light industry, chemistry and services. These results confirm the findings of several research on innovation management (PwC, 2008; Browning et al., 2008; Andrew et al., 2009) that during the last decade, managers focus their efforts on creating efficiencies and cutting costs. Such strategies create cost advantage and allow market success through price-based competitiveness. In long term, however, they jeopardize the flexibility of company systems and business processes.

Bulgarian managers define growth and improvement of their competitive position as generic strategy of their firms. A positive sign is their intent to integrate the cost-based strategic focus of the companies with targeted activities by products/markets. Unfortunately, most of Bulgarian SMEs are trying to decrease costs per product unit instead of seeking product differentiation which is more suitable when the strategic focus is targeted on products/markets. The predominant share of investigated firms tries

to implement their strategies for change relying mainly on internal resources (60% on average), followed by adapted external resources, and standardized external resources. This finding confirms our proposition that there is an inherent tension between, on one hand, the conservation of existing practices and behaviors, and, on the other hand, innovation or transformation strategies.

3.3. Conclusions, limitations and implications for future research

The methodology of present paper is developed in the context of strategic innovation paradigm. The aim of the proposed Co³MDI conceptual model of agile innovation management is to support businesses to develop their innovation management activities as a business agility plan to approach change confidently. Based on research results it is concluded that Bulgarian firms are willing to initiate a change in order to improve their competitive position but using the “wrong” development determinants such as costs and investments and relying mainly on internal resources. The last two determinants are typical for organizations with a dominant focus on achieving organizational stability and control with a time span of impact up to 1-2 years. Reliance mainly on internal resources during the first stages of organizational evolution “closes” an organization into a repetitive loop of organizational learning instead of giving it a “push” for further development. Few conclusions could be drawn. First, transformation during change implementation requires involving the organization across design, direct and develop phases (Luggen, 2004: p. 41) of strategic innovation management. Second, change programmes encounter rational and emotional impediments as the roll from the top team, through middle management, and down to the front personnel. Middle management’s ability to roll the change down to the front line is compromised. Frontline employees experience similar resistance. Business agility blueprint provides an opportunity to develop a shared view of an organization facing change. Third, successful change management should focus on interrelation between innovation, communication and investment values within the economic value chain.

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