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AUTHORS	Evgeny A. Kuzmin
ARTICLE INFO	Evgeny A. Kuzmin (2017). Risk and uncertainty in concept of corporate lifecycle. *Problems and Perspectives in Management*, *15*(1), 107-114. doi:10.21511/ppm.15(1).2017.11
DOI	http://dx.doi.org/10.21511/ppm.15(1).2017.11
RELEASED ON	Wednesday, 29 March 2017
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JOURNAL	"Problems and Perspectives in Management"
ISSN PRINT	1727-7051
ISSN ONLINE	1810-5467
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”

NUMBER OF REFERENCES **20**

NUMBER OF FIGURES **0**

NUMBER OF TABLES **0**

Evgeny A. Kuzmin (Russia)

Risk and uncertainty in concept of corporate lifecycle

Abstract

Regularly changed destructive periods in organizational development mean that the lifecycle exists. A nature of its formation hides a number of important conceptual regularities. One aspect of these trends is relationship between distribution of uncertainty and risks in lifecycle models, underlying motives of their formation and determining participation in development of organizational immunity. A closer definition of these issues is an objective of this research. The paper reviews the history of the lifecycle concept, gives its analysis and possible applications in management studies. In the analytical review of literature, there is an attempt of theoretical systematization for some provisions from the concept on consistency and continuity of stages turnover, on conditions of their identification and a nonlinear path. For discussions of the scientific community, the author presents hypotheses of the available effect of compression (density) in development stages, as well as heterogenic risk concentration. There is an assumption that economic systems have different orders for both the general and short lifecycles. Based on generalized theoretical and methodological provisions of stages in the lifecycle phases, the author attempts to combine functional and evolutionary models. The author also details distinctive features in the process of control over uncertainty and risks in the sequence of development stages.

Keywords: lifecycle, development path, risk, organizational changes, uncertainty, flexibility, manageability, organizational immunity.
JEL Classification: D91, D81.

Introduction

Many factors influence competitive advantages of an economic agent. Functioning within an open stochastic system, economic agents are increasingly interacting with an external environment, which essentially contributes into their exposure to risks. More and more sophisticated interactions entail manifestations of uncertainty and associated risks. A priori dependence of uncertainty and risks within business systems makes effective management especially important as it helps to minimize dangers and threats and build the best development strategy and path.

Following the development path is associated with cyclical ups and downs that are ceteris paribus normal. It is usually considered that the lifecycle of a specific economic agent is not repeated over time and it is a final sequence of developmental stages. It is typing of each phase's distinctive features that is the basis for lifecycle models. However, there areactually no models, where a qualitative or a quantitative indicator is a criterion for stage identification. In all the models, these indicators are complex and often complementary. As a result, identification of aneconomic agent's condition with a certain development stage is a very complicated task. However, it seems that it would be efficient to address specifics of the overall risk. We might find that dynamics of risks explicitly depends on dynamics of the corporate lifecycle.

Evgeny A. Kuzmin, Assistant lecturer, Ural State University of Economics, Russia.

Thus, the task of the lifecycle stage identification with no clear description is currently coming down to an assessment of the overall risk and a range for its fluctuations at each stage. This logically leads to ideas about risk acceptability when a tolerance level changes over time. This research was designed in this vein. It considered challenges associated with a fatal impact of uncertainty and risks, as well as adjustment of economic agents to volatile environment. In this regard, a number of specific scientific problems was set and solved. They ensure more effective risk management taking into account the corporate lifecycle.

1. Prerequisites for correlation between lifecycle, uncertainty, and risks

The environment of economic agents is constantly changing accentuating a need to study patterns for changing destructive periods, in time of which a state of the environment is projected on internal processes and vice versa. This interdependence is relevant to business or lifecycles, without a research of which risk management would be a hostage of wrong apperception when the hypothesis is admitted about a static character of admissible and acceptable risk levels in their dynamics, which, of course, is not true.

The lifecycle in the most general sense is a cumulative characteristic of trends opposing at first glance. They actually show self-organization in consistent balancing between internal and external processes. In absence of such regulation, a business system and its economic agents exposed to progressive imbalances in a non-perfect economic mechanism would be doomed to self-destruction. A n applied meaning of the lifecycle concept is implemented here in two ways: on the one hand, it can be used for forecasting to reduce uncertainty based on information about probable paths for ongoing processes with space-

time extrapolation. On the other hand, known characteristics of cycle stages influence tailored approaches to management.

It is clear that the model of 'rigid' management prevailing up to a point has exhausted its capacities. Adjustment of business systems under conditions of increasing uncertainty leads to an appearance of 'soft' management models, in which the lifecycle serves as a reference structure-forming design. Molina, Sánchez and Kusiak (Molina et al., 1999, p. 445) confirm this. They reasonably point out that now 'urgency in designing (of organizations *–A/N*) for the external environment... (leads *–A/N*) to a need in a comprehensive and reliable evaluation of the lifecycle.'

Given the fact that both quantity and quality of 'risks' influence changes in the management lifecycle' (Atef, 2005, p. 13), it seems reasonable to review a mechanism of successive changes. A hidden structure of the lifecycle is a way of thinking '…with which we consider an overall impact when we choose how to use any of them (element of the system, including the system itself as an area of socio-economic cooperation – *A/N*). This way of thinking assumes the general lifecycle of any decision and includes all the exposures in areas related to the (managerial–*A/N*) decision' (Glick, 2007, p. 22).

Uncertainty dynamics suggests that it is *a thorough assessment of uncertainty level and (a priori conjunction) the level of riskiness it becomes possible to define lifecycle stages for a specific economic agent.* Consistency of this view is with reason confirmed by Boyd and Blatt (Boyd and Blatt, 1988). The authors suggest a use of a new indicator, which can be conventionally called *the horizon of uncertainty.* With further discussion of risks affordability and acceptability, uncertainty apperception becomes important in terms of control.

These and other factors say about insufficient methodologies. It is clear that there is a need to develop a set of techniques and approaches to assess correctly a nature of correlation between the lifecycle and uncertainty together with risk determinacy. It is also important to consider that each stage has its inherent level of riskiness, which can be called normal, so with an influence on threats in cases where this level is exceeded, there is a question whether such actions are required from the management point of view.

2. Literature review

2.1. Lifecycle. Systematized research papers in this field have shown that many researchers had discussed the mentioned issues. Approaches to the issue can be conventionally divided into those used in the project area (Smith, 2003, pp. 18-21), in respect of companies and organizations in real economy, in the field of applications (Chumak and Gorbunova, 2009), in the financial sector (Damodaran, 2010) and many others. Each field has key indicators saying about a change in the lifecycle condition, saying that a characteristic of an economic agent presupposes a transition to another development stage. It is worth mentioning that understanding of this to some extent looks, as, judgmental as for an organization the transition from one stage to another will only become clear in some time.

Along with the abovementioned authors, identification of lifecycle stages is discussed by such contemporary scientists as Gupta (2010), Perenyi, Selvarajah and Muthaly (2008), Daft (2007), Kapoor (2009), Aharony, Falk and Yehuda (2003), Zhipeng and Zhao (2010), Ivanov (2009), Grebenkin (2016), Shamrai (2010), etc.

There is an opinion that the lifecycle concept for economic agents was completely stated as late as in the beginning of the 20th century. Shirokova, Klemina and Kozyreva (2007, p. 4) confirm this, saying that 'the lifecycle concept in general appeared in the late 19th century as a set of ideas, including ideas of succession and development at the level of individuals and organisms.' However, the author's research has led to somewhat another conclusion. Special attention should be given to the encyclopaedic article by Barrow (1839, p. 3738). The article makes connections between uncertainty and the lifecycle in consequences of'regular changes in a value of … property ... in conditions of uncertainty and an ongoing concern'. Reflecting on prosperity and economic ruin of 'the working class, farmers, merchants, manufacturers, retailers, all those who had been in prosperity and active', but in a few months upon difficult conditions faced their decline, Barrow makes a number of very important observations. The main among them is that 'everything falls in value', given that 'upon a success and a ruin, when it is over, prosperity returns'. The main conclusion from this research is that 'prosperity and misfortunes and their intermediate states move in an infinite cycle'. It seems that it is these words that are the first mentioning of business cycles in economy and of a sequence of various conditions and their turnover. Only in more than 125 years, one of the first modern models of the lifecycle was developed.

Haire (1959) might be among the first attempts to describe in a synectic way the concept of the lifecycle. The organizational structure is explained with models of biological behavior. Later, other researchers followed this up. A start for active development of ideas on modelling organizational changes is associated with the model of corporate lifecycle proposed by Chandler (1962). There are proved arguments for the hypothesis of changes in the organizational structure, when they result from changes in the company's growth strategy using external opportunities. Summarizing ideas of scientists about lifecycle models, we can for sure say that it is Chandler's paper that laid the foundation for further research on lifecycles in different areas of the

organization theory. So, Balkin and Gomez-Mejia (1987) accentuates human resources in an organization; Filatotchev, Toms and Wright (2006) focus on management systems and this is supported by Jawahar and McLaughlin (2001) with their research of parties interested in activities of enterprises and organizations (stakeholders) at each stage. Huse and Zattoni (2008) empirically proved the assumption that 'the payment for behavior'– cost of changes-changes together with lifecycle stages and depends on 'relationship of trust' between agents.

Variety of lifecycle models makes it difficult to achieve consensus on a number of stages and defined time of their turnover. As an example, we can refer to *models* used for *industry* (Porter, 1983; Moore, 1991), *manufactured product* (Levitt, 1965), *company or economic agent* (Gupta and Chin, 1993), *personnel* (Ference, Stoner and Warren, 1977), *population of organizations* (Hannan and Freeman, 1977; Hannan and Freeman, 1978), *information and knowledge* (Sugumaran and Tanniru, 2002), *dynamic capacities* (Helfat and Peteraf, 2003) and so on. However, even for models from the same group of research subjects, it is impossible to identify similar messages for justification of the number of stages, much less attributes of each of them. Indicators have a pronounced capacity for fluctuations, while discretization of values is only usual for some of options. As a result, *boundaries between stages are blurred.*

Reviewing theoretical principles of lifecycle models, we can conclude that they touch three distinct areas. Roche (2009, p. 45) believes that these areas include *sophistication of organizational administrative tasks, a more complicated organizational structure and development of organizational competencies.* Regarding the latter, it can be said that *economic agents, benefitting from relatively favorable conditions in the lifecycle, can develop the factor of safety making new organizational elements.* Therefore, Miller and Friesen (1984, p. 1164) say that 'between stages (for example, birth, growth, or revival) organizational competences are developed or renewed, as well as those that are used by performance (maturity and decline)'.

2.2. Organizational changes. Due to the wave nature of uncertainty and cascade generation of risks, research papers on organizational failures have a special place. *If at the beginning of the lifecycle, failures result from a lack of practice, as a learning process is only introduced, then, in later stages, errors and failures in internal processes reflect, on the one hand, control imperfections, on the other hand, imperfectly set and built processes*. Many scientists, such as Slarbuck, Greve, Hedberg (1978), Staw, Sandelands, and Dutton (1981) and Roche (2009) discuss organizational failures.

There is a widespread opinion that any changes inevitably influence general evolution of an organization, and there must be no lagging or advance. However, the traditional idea of interdependence is inapplicable here. The lifecycle model includes a number of stages, their duration depends on a speed of a reaction to external and internal stimuli and an ability to maintain a continuous process under conditions, where an economic agent is close to the point of 'saturation' and further attempts to go beyond boundaries of the perfect path can result in additional risks. This happens, as fluctuations created by an organization itself in the environment cause a reciprocal increase in uncertainty as a result of business system resistance to maintaining the order in its own structure. As it was precisely put by Have, Have and Stevens (2003, p. 7), saying that the 'corporate lifecycle is not necessarily described with age of an organization but (may be represented – *A/N*) with its current vital powers'.

Organizational failures as a reducible form of risks point to mobility of an economic agent. It is developing, while failed operations are fatal. At that, Roche (2009, p. 55) says that 'weakness in one part of an organization usually causes other drawbacks'. However, it is important to mention that it is not a manifestation of institutional failures itself, but their specific amount and a depth of penetrated *failures' wave motion* must indicate an exposure to risks. *In conditions when a company increases its complexity, the projecting depth for initial errors and failures will be proportionally increased.* This significantly increases a role of control mechanisms that prevent a cascading spread of risks. Coordination can be regarded a control tool. Smith, Mitchell and Summer (1985) suggest that an economic agent is in an ongoing choice of priorities that change during the lifecycle.

3. Results

Confirming the variety of lifecycle models, researchers mostly agree on a number of conclusions. To summarize theoretical concepts, it will be reasonable to make methodological systematization of certain provisions within the concept.

3.1. Sequence of stages. Each lifecycle stage sequentially follows a previous one. However, there are assumptions that in some cases, an organization may skip certain development stages. In the evolutionary plane, even when the organization is in the favorable external environment, there are no registered transitions to other stages with skipped stages. This follows from the existing problem of observability. If changes have so quickly occurred that the organization appears to be in a new stage of its lifecycle, it does not mean that other stages (which are 'between') have been skipped. In this context, the agent goes through all the development stages, including interim, with the difference that their length in time is very short.

Discrepancies arising in research of the lifecycle stages derive from complexity in defining conditions, which, depending on the decomposition technique, may vary considerably. The number of stages is not so much as essential here as accuracy of their identification and description. Stokes, Wilson and Mador (2010, pp. 118-119) confirm this saying that 'the transition from one stage to another does not necessarily comply with the order stipulated for the predicted model. Economic cycles and trade are beyond a company's control and can make a significant contribution to a growth of an enterprise or its decline at any time, regardless its development stage'.

3.2. Continuity of development. In the turnover of stages, there is an effect of succession. Each stage embodies features of a previous development stage with the risks and threats that in a transit way, have also moved to the next stage. The property of irreversible processes and phenomena implies that an organization cannot return to its original state (recover) if changes have already occurred. However, empirical research suggests otherwise. In its development, an organization can parametrically be in the same condition at different time repeatedly. In addition, the problem of lifecycle stage identification is clearly manifested here in view of similar indicators, despite the fact that conditions were observable at a sufficiently large time distance from each other.

It is worth paying attention to the time factor that in the lifecycle, has a dual role (Grebenkin, 2016). On the one hand, stage duration is not subject to clear distribution and stages of the same type can differently last in time. On the other hand, a favorable moment of economic agent incorporation is very important, as organizational competences will be more quickly developed.

3.3. Identification of stages. With all the variety of lifecycle stages and their names listed in sources, only 4 development stages are mostly highlighted: from establishment and growth to maturity and decline. The models, encouraging another number of stages either thoroughly detail the lifecycle with more than 4 stages (Greiner (1972); Miller and Friesen (1984); Lester, Parnell and Carraher (2003) – 5 development stages; Flamholtz (1986)– 7; Torbert (1974) offers 8; Adizes (1989) offers 10 development stages), or, on the contrary, combine stages into larger units up to clear stages in evolution of organizations (Lippitt and Schmidt, 1967; Kuang-cheng, 2005; in effects from a combination of prototypes for natural elements; Katz and Kahn (1978) offer 3 development stages).

We think that stage detailing makes for certain analytical capacities of the model worse. With all the scientific solvency of these approaches, they have not been able yet to be helpful to warn about time of a transition to another stage. There is an important management task in this aspect. The changes that are stage-specific, determine specific responds. Management that follows the lifecycle stages is much tailored. However, ambiguously interpreted conditions due to a large number of stages and key indicators confuse applied researchers, making it difficult to use lifecycle concepts in management aspects.

3.4. Non-linear path. The lifecycle concept provides a non-linear movement along the development path. Arguments for this view are based on the assumption that the path of an organization is accompanied with inhomogeneous fluctuations with varying frequency and, therefore, its motion path cannot be actually static. However, understanding that there is not only an actual motion line available, but also the perfect one, makes it possible to clarify the lifecycle content.

The author thinks that a nature of path movement only coincides when an economic agent 'guesses' responses to made decisions. However, the actual path is a collective interpretation of agent's conditions when the lifecycle design allows us to understand errors of incorrect management. Non-perfect mechanisms of internal coordination leads to fluctuations. Facing a hostile environment, an organization, in view of Daily and Dalton (1994a, 1994b), is able to 'slow down an effect' using its ability to adjust. According to Staw, Sandelands and Dutton (1981), the lifecycle adjustment is in correlation with 'the mechanical shift' when there is a change to the management structure.

If we put the perfect path as a straight line with a slope in normal development, then, the actual path is moving away from it over time influenced by the *force of attraction.* Going from the perfect line path development does not mean that a fate of an economic agent has been sealed. Each new round in development of an agent is accompanied with appearance of another perfect path. As soon as a set of made and implemented decisions starts making a negative impact, the perfect path adjusts to a course of movement and gets more and more closer to the horizontal line, while uncertainty increases. Risks of the environment are a major factor that determines sustainability in development of any organization, its uninterrupted operation and movement.

3.5. Functional and evolutionary combination (integration of cycles). Usage of lifecycle models is limited with available functional and evolutionary components. If evolutionary development of an organization is not in doubt, and the lifecycle (according to Guinée) as 'a series of interrelated stages' (Guinée, 2002, p. 113) is built depending on detailing depth, a functional transformation is not so straightforward. We can only come from the fact that assessment of the lifecycle 'belongs both to procedural techniques and certain studies' (*Ibidem*). To address the objectives set for this research, it will be reasonable to offer an original sequence of cycle stages, where the evolutionary and functional structuring principles are combined in a natural way.

Adhering to the traditional view of staging in lifecycle models, the author suggests distinguishing between five successive stages: *initiation, sustainable organization, simple system, improving structure and empowerment.* The first four stages in the lifecycle successively follow each other, excluding the empowerment stage. You may feel that this is in conflict with previously made conclusions and ideas of stage turnover in corporate evolutionary development, but a specific position of the empowerment stage eliminates possible inconsistencies. The detailed description of the approach is beyond the scope of this research and will be presented later.

3.6. Density of cycle stages. Based on content attributes for lifecycle stages, the author concludes that *there is a phenomenon of compression (density)* of development stages in time of their combination. If the evolutionary model is considered a reference one, you can conclude that at least one stage in the functional model accounts for one stage inthe basic model. As a result, operations at different times are not concentrated in the same way, causing periods of relatively low or relatively high activity.

The activity index might be an indicator for manifested riskiness in processes and, at the same time, for riskiness of the lifecycle stage, as a probability of failures increases with an increased number of operations. Gunnigan (2007) and Treharne (2003) point out that the highest risk is observed in the early stages – in time of construction and commissioning of investment projects. Therefore, *the risk as a cost-specific attribute of a possible damage and riskiness as a measure of quantitative probability of such the damage change in the course of project implementation, increasing and decreasing independently. Density of lifecycle stages due to different functional content and business complexity leads to the fact that stages are described with various saturation of risks. The risk saturation rate introduced by the author is calculated based on the ratio between the total cost of a probable damage and the number of risks* for which the damage accounts. Thus, the risk in each stage will depend on density of process (for functional models) or compression of development (for evolutionary models), where the time factor plays an important role in distribution of works.

4. Discussion

Describing riskiness of operations, the author puts forward a hypothesis that each stage of the lifecycle has a reasonable and adequate risk level. If we accept this hypothesis, another scientific challenge appears, i.e., a search for a normal risk level as such. The author believes that it is an acceptable risk level that says of an active or passive form of risk management. Based on similarities between the lifecycle stages, it makes sense to specify the criteria that help to identify the stages and their relationships with risks.

As we have already mentioned, the lifecycle models are very diverse. However, despite a non-essential number of stages, this is the top focus point. In this context, it is worth to refer to Perenyi, Selvarajah and Muthaly, who reasonably say that 'research on corporate lifecycle models was focused on a description of their development nature, whereas the stages in the development process were out of focus in time when they piloted the lifecycle theory' (Perenyi et al., 2008, p. 23). As the development of the lifecycle concept was originally designed to explain organizational changes, various versions of models were focused on a prognostic potential in a search for a possible development way. So, Lippitt and Schmidt (1967) used the lifecycle theory to form managerial skills, knowledge and attitudes. Smith, Mitchell and Summer (1985) – to identify priority operations; Lyden (1975) – to find effective solutions. Scott and Bruce (1987), Churchill and Lewis (1983), Quinn and Cameron (1983) – to find factors of a growth and a decline in business. However, the research corpus can be only reduced to this. There is a special place for papers that confirm the idea of the non-linear lifecycle, path, like Massey et al. (2006), McMahon (2001). On the other hand, there is an idea of inconsistency in a change of lifecycle stages (Hanks et al., 1993; McMahon, 2001) and it is opposed to Lester, Parnell and Carraher (2003).

It is the non-linear lifecycle path that suggests some regular dynamics for a number of indicators. They have their top and lowest limits for oscillations or discrete characteristics (for quality criteria). At the same time, a search for an oscillations scale is associated with the problem of estimating. Dynamics of indicators might be inhomogeneous at different stages of the lifecycle, while borders can be quite judgmental.

Following common-sense logic, we can make an accent on some true-to-life factors. Gupta (2010) gives the most significant causes for a decreased activity. Although in a conventional sense, each cause is a prototype of a specific risk in operations of a company. Among them, the factor of 'organizational atrophy' shows up, which, according to Gupta (2010), encourages 'slow degeneration' due to the excessive bureaucratic culture, the cumbersome hierarchical structure of an economic agent and its oversize. Other possible causes include a decrease in the market share (which is probably a consequence rather than a cause), decreased profitability due to higher production costs, etc. Thus, an idea and a reference to a definition for lifecycle stages using practical indicesfor financial and economic activities of a company might not be fully correct.

Dynamics of the abovementioned indicators leads to a conclusion that the risk varies according to cyclic distribution. However, the question arises as to what extent dynamics of some indicators describes *the lifecycle in general*. According to the authors, the lifecycle in general is a single closed and non-repeating sequence of steps. It accumulates all ongoing changes at an organization. This also means that *in addition to the general lifecycle, which itself shows corporate evolution*, *there are many other small inner cycles*. Firstly, the time horizon depth says about a sensitivity degree when small periods show their higher susceptibility to changes. Secondly, it becomes important to set such a period, which could present the cycle as a wave without repetitions. Period variations allow us to build oscillation cycles for baselines with different wave lengths.

Managerial decision-making in this case should depend on a choice of a specific time horizon. A change in a period, in which we build the lifecycle, creates conditions for a change in logic of reasonable behavior. A 'properly' chosen reference period for lifecycle-making enables us to follow the perfect motion path as closely as possible. However, the external environment, even with no changes tointernal processes, is in a continuous transformation. Thus, the small corporate lifecycle by given financial and economic indicators does not have a static, but a dynamic period, which varies under an influence of the time rate of changes that take place in the external environment. All these features essentially complicate research on cyclicity pointing out to new scientific challenges and challenging applications of the lifecycle theory.

Refinements for the nature of corporate resistance in the sense that the negative impact of environmental uncertainty and risks reduces viability of an economic agent are not limited to research on operative factors. In this regard, a distance between cycle paths is of a particular importance. *The bigger it is, the more significant an impact of risks and a growth in their quantity are with the continuing trend of going downward.* From this, we can conclude that *adverse conditions will eventually form a particular experience of operations, which can increase the lifecycle.* In this case, the conclusion about institutional immunity of an economic agent requires an in-depth empirical evidence.

Conclusion

Having summarized theoretical and methodological attitudes towards stages in the lifecycle and their impact on risks, their role in making the overall (general) and small cycles, the author has attempted to combine functional and evolutionary models. Strictly following traditional views on the corporate lifecycle, we have identified five successive stages, starting with the stage of initiation, continuing at stages of sustainable organization, simple system, improved structure and ending with the particular stage of empowerment. Combining approaches will make closer a solution to accumulated conflicts between models, which for a long time have been preventing us from making a clear line of effective management. It becomes clear that the 'rigid management model prevailing at one time has exhausted its capacities and is no longer an adequate form to develop the best development strategy and path. Adjustment of organizational and economic systems in the environment, where uncertainty is getting higher, gives rise to 'soft' management models, where the lifecycle serves as a reference structure-forming design.

Along with this, the identified specifics of combined lifecycle models has led to the conclusion that there are properties of compression (density) that cause periods of a relative decline and growth in riskiness of business. The research has once again reinforced the hypothesis of a robust connection between uncertainty dynamics and the lifecycle. It is with estimating uncertainty and risk levels and their correspondence that we may identify stages in the lifecycle.

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