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MANAGEMENT OF ENTERPRISE BUSINESS MODEL TRANSFORMATION BASED ON VALUE SPREAD MODELLING

The paper reasons need of timely transformation of business model under the conditions of rapid changes of business environment. Peculiarities of alternative temporal system development models are analyzed. The basic stages of enterprise business model design are identified and possible financing models of each stage have been characterized. The economic and mathematical model of value spread assessment, aimed at business market value maximization has been developed.

Keywords: business model; transformation; value spread.

Лариса В. Фролова, Олена С. Кравченко УПРАВЛІННЯ ТРАНСФОРМАЦІЄЮ БІЗНЕС-МОДЕЛІ ПІДПРИЄМСТВА НА ОСНОВІ МОДЕЛЮВАННЯ ВАРТІСНОГО РОЗРИВУ

У статті обґрунтовано необхідність своєчасної трансформації бізнес-моделі в умовах швидких змін бізнес-середовища. Вивчено особливості альтернативних моделей розвитку системи в часі. Ідентифіковано основні етапи формування бізнес-моделі підприємства та охарактеризовано можливі моделі фінансування кожного етапу. Розроблено економіко-математичну модель оцінювання вартісного розриву, спрямовану на максимізацію ринкової вартості бізнесу.

Ключові слова: бізнес-модель; трансформація; вартісний розрив.

Форм. 2. Табл. 2. Рис. 3. Літ. 24.

Лариса В. Фролова, Елена С. Кравченко УПРАВЛЕНИЕ ТРАНСФОРМАЦИЕЙ БИЗНЕС-МОДЕЛИ ПРЕДПРИЯТИЯ НА ОСНОВЕ МОДЕЛИРОВАНИЯ СТОИМОСТНОГО РАЗРЫВА

В статье обоснована необходимость своевременной трансформации бизнес-модели предприятия в условиях быстро изменяющейся бизнес-среды. Изучены особенности альтернативных моделей развития системы во времени. Идентифицированы основные этапы формирования бизнес-модели предприятия и охарактеризованы возможные этапы финансирования каждого этапа. Разработана экономико-математическая модель оценки стоимостного разрыва, ориентированная на максимизацию рыночной стоимости бизнеса.

Ключевые слова: бизнес-модель; трансформация; стоимостный разрыв.

Introduction. Ensuring the efficient development of enterprises under the conditions of complexity and uncertainty of business environment changes is possible due to efficient business model building. One of the key indices determining business model efficiency is the level of its innovation. The higher it is, much more possibilities the enterprise has to assure the qualitative transition to a new development level. The issue for solving this problem is complicated by the fact, that under the conditions of contemporary business environment it is almost impossible to build an efficient business model once and for all. Each enterprise, as it develops, should make

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the assessment of business model compliance to the requirements of contemporary business environment and to assure its timely update (transformation) in order to achieve intended objectives and improve competitiveness. It causes the necessity to change the existing common approaches to enterprise development management. The possibilities to assure the efficient development within the given context are minimized not by the lack of business model, but by the lack of assessment of its transformation expediency. From this perspective the development of theoretical and methodological aspects related to enterprise business model building, the assessment of its transformation expediency in order to assure efficient development is crucial, which makes the research in this field very urgent.

Recent research and publications analysis. Theoretical and methodological framework for business model innovation assessment are the works of the scientists on enterprise business model development grounding (Badulin, 2010; Kireysel and Stone, 2008; Margetta, 2002; Slywotski, 1996; Osterwalder and Pigneur, 2011; Shatalov, 2010 etc.). The above cover original concepts of analysis, development and improvement of business models, the elements of business models and mechanisms of their interaction are studied. However, at present, when the economic logic of business has been changing, the question of innovation business model building for assuring efficient enterprise development is very important. It requires formalization of business model management at each stage of its design and development of methodological approach to determine the business model innovation level at a certain stage of enterprise development.

Nowadays it is clear that while considering the issues of innovation business model building as a basis for efficient enterprise development it is necessary to take into account the multilevel approach and contemporary concepts of innovation management depending on decision level. The research conducted revealed that domestic and foreign scientists made a great contribution to the innovation science. Thus, N. Kondratiev (2002) developed the world-known long wave theory, or the theory of economic cycles. His ideas and hypotheses about clusters were further developed by J. Schumpeter (2011) in his concept on inequality of innovation activities, which in its turn, was then developed in works of G. Mensch (1975) and A. Kleinknecht (2003). The detailed typology of innovations was presented by Y. Van Dane (2000) and A. Prigozhin (2003) further developed their broad classification.

Unresolved issues. Giving tribute to the existing workings, it should be noted that the issues of interrelation between the concepts of business models and innovations in the context of enterprise development under the conditions of "new economics" have only been developed theoretically. Thus, the solution of the expediency of business model transformation is one of the most important tasks of contemporary business environment.

The aim is to identify the principal stages of enterprise business model building, to determine the possible financing models for each stage and to develop an economic and mathematical model for expediency assessment of enterprise business model update (reengineering).

Key research findings. Under transformational conditions any type of innovation is an important factor of efficient operating and dynamic development of any contemporary enterprise. Besides, the enhancement of integration processes requires

rapid response to business environment changes and timely efficient decision-making on transformation of working business model of an enterprise. If enterprises ignore the signals of business environment and don't update their business models in time, they will lose their competitive advantages, decrease their performance and even go bankrupt. For example, the famous photo camera manufacturer company "Eastman Kodak" founded more than 130 years ago and was first to launch a portable photo camera, couldn't response adequately to expansion of digital cameras and make a timely technical transformation of its business model. As a result, "Kodak", the titan of photo industry and the pioneer of photo and cinema engineering, declared its bankruptcy and lost its market share at the beginning of 2012. Having strong productive capacity, the company management decided to reengineer its business model to restart its activity (the official data from Eastman Kodak Company). The new transformed business model of the company "Kodak" is aimed at implementation of the following business solutions: package engineering, manufacturing of complex printing machines and printing of electronic components (displays and microcircuits). Nowadays the business model of "Kodak" develops and improves its key activities. The innovationally updated business model of "Kodak" is aimed at regaining its market share. According to the reported data on the official site of the company, since 2013 the loss of consumer's market segment has been decreasing significantly, and the operating index EBITDA increased (Table 1).

Table 1. Basic financial indicators of the company "Kodak" for 2012–2013

Financial indicators, mln USD	Key activities			
	GECF Segment*		DP&E Segment**	
	2013	2012	2013	2012
Sales and other operating income	353	404	198	231
Total profit	44	52	47	35
Selling, general running and administrative expenses (SG&A)	56	78	45	66
Expenditures of the business model on research and development (R&D)	5	8	23	27
The loss of the market segment, %	-17	-34	-21	-58
The operating index EBITDA	13	12	-10	-35

* The GECF segment consists of the Graphics and Entertainment Imaging & Commercial Films groups, as well as Kodak's intellectual property and brand licensing activities.

** The DP&E segment consists of 4 product/service groups, Digital Printing Solutions, Packaging and Functional Printing, Enterprise Services and Solutions, and Consumer Inkjet Systems.

Source: compiled by the authors according to the data from Eastman Kodak Company.

These indices prove the efficiency of management decision of "Kodak" concerning transformation of the business model and change of key activities. According to Table 1, the transition to updated business model (GECF and DP&E) cannot assure immediate high economic performances. This is proved by the decrease of such indices as sales and total profit. However, the company has gradually started regaining its lost positions and market share, and its operating index EBITDA has been improved its rate.

Therefore, the solution of the issues of efficient management of enterprise development on the basis of innovative business model building is a guarantee of enterprise competitiveness at the market.

The abovementioned example of company development allows determining dependency between development processes of the enterprise on periodicity of innovation processes. In this case, innovations have wavelike (cyclical) nature, i.e. one innovation is followed by another, which more commercially successful, thus assuring continuous development of the social system.

In general, cycles are the common form of any system movement in nature and society. Every cycle has 5 stages of development. They are: genesis in the context of the previous stage; formation of innovations; diffusion; stable development (maturity); substitution of this system by new, more progressive one (critical stage). After these stages the system can transform into a new, more qualitative one (the next stage of its development), or can be disintegrated, saving for some time its former relicts (Yakovets, 2000).

The distinguished Russian economist and sociologist N. Kondratiev made a significant contribution to the wavelike development concept. The structure of his cycles is very simple. Each cycle consists of 4 stages: prosperity, decline, depression, and increase (Kondratiev, 2002).

This goes to prove that waves can have two directions: decrease and increase. The increasing wave is a period high economic trend in the world economics and its rapid development, and easy overcoming of brief crisis. Decreasing wave is a period of long-term predominance of the low economic trend when despite temporary growth, depression dominates and the world economics is unstable. During the period of decreasing wave the world economics seems to save its strength and recourses for a new thrust, new cycle of evolution (Kondratiev, 2002; Cherepkov, no date).

The cycling of economic development is proved by the results of analysis of macroeconomic indices of the XX–XXI centuries.

J. Shumpeter (2011) developed his theory of innovation cycles, using his own works on the entrepreneur's role in economic development processes and the theory of long-term waves of economic dynamics. According to this theory, long waves are the forms of economic dynamics created by innovation process. It means that all cycles are created by innovations. Innovation is an eventual result of innovations implementation aimed at changing management objects and receiving economic, social, scientific and technical, ecological or other effects.

Research on economic development of the following theories: life cycle theory; personal development theory; quality theory; corporation theory etc.

The development process both according to N. Kondratiev's theory of long-term waves of economic dynamics and the theory of temporal innovation cycles of J. Shumpeter (2011) are presented by two curves of S-shaped and cycle models (Figure 1).

We assume that the general tendency of any system development is situated along the axis of time. Parallel to the axis of time are situated 4 axes which represent the cycle stages: axis *A* represents increasing, axis *B* – limited growth, axis *C* – contraction, axis *D* – stabilization. The axial movement of the system is caused by its internal and external possibilities concerning the assurance of new quality of the system, i.e. its transformation.

Studying the peculiarities of enterprise development, N. Badulin (2011) states that every business has 12 stages of development with typical processes of acquisition

of income of fundamentally different nature. For a certain stage of business development a certain investment model is typical, each being the component of "General applied cost estimation business theory – GACEBT".

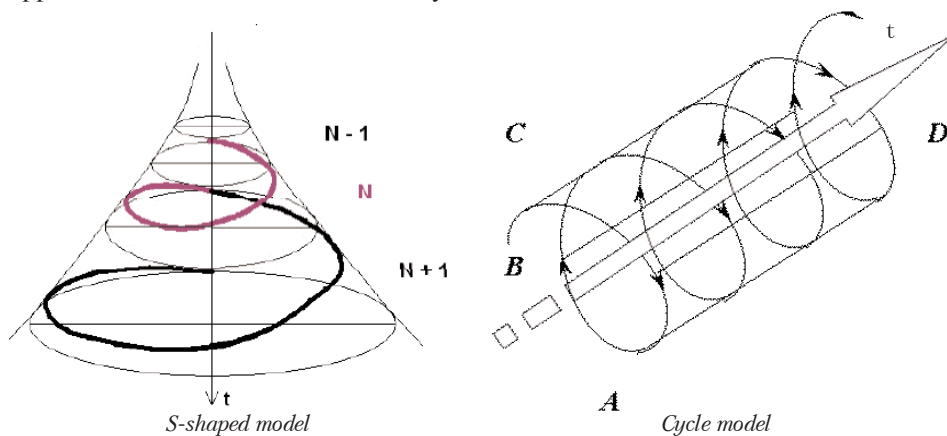


Figure 1. Models of the temporal system development, constructed by the authors

Under the conditions of radical changes, caused by globalization, the assurance of enterprise efficient development and integration of its business activity are only possible providing timely innovation update (or transformation) of the working business model. In this regard, in order to ground the business model update or strategic transformation, it is necessary to determine the stage, on which business model reaches its highest level of innovation maturity.

Having studied different approaches to peculiarities on enterprise business model management (Verba, 2010; Shatalov, 2010; Margetta, 2002; Pellengahr, 1995; Slywotski, 1996) we discovered that for any business model there are common stages of its building, which are shown in the mixed coordinate system (Figure 2). Meanwhile, innovation maturity of a business model attains its maximum at the 12th stage of its building. Accordingly, decisions on updating or transformation of A business model are made in the nodal point.

As it has been mentioned above, for each stage of business model building certain investment models are typical. Having studied literature on the subject, we have developed possible financing models (GACEBT) for each stage of business model (Table 2).

Summarizing scientific results in innovation processes management at the enterprise we can state that though innovation processes are subordinated to economic development laws, still they have specific peculiarities and have two cycles of development. They are generation and diffusion (market cycle). The generation cycle, as some scientists state (Verba, 2010; Gerasimenko, 2013; Keriysel and Stoun, 2008), is more hazardous and cost-based, in comparison with the market cycle. Cash flow and profits are different at different stages of innovation process of business model building.

Efficiency of management decisions on updating (or strategic transformation) of the business model determines the cyclicity of both cash flow and amount of profit of an enterprise. In general, the accuracy of estimation of the business model updat-

ing/transformation can be determined on the basis of value spread (Popkov and Evstafeva, 2007), i.e. the difference between the current business value and its value after the business model update. This value spread in the context of enterprise development must be only positive. Otherwise, the complete degradation of business model will occur and its further updating /transformation will not have any economic sense.

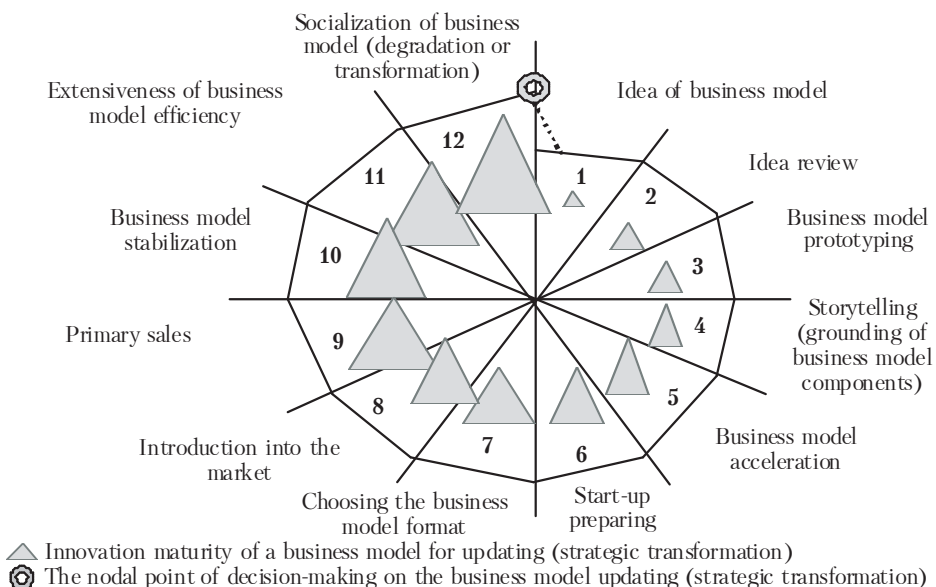


Figure 2. Enterprise business model building, compiled by the authors'

Table 2. Principal models GACEBT for each stage of enterprise business model building, compiled by the authors'

N	The stage of business model building	Characteristics of possible financing models (GACEBT)
1	Idea conception	There is no need for financing at this stage
2	Idea review	At this stage low expenditures, for research and analysis of information, concerning the business model implementation. The source of investment is internal funds.
3	The business model prototyping	At this stage expenditures are also low and are covered by internal funds and the so-called "family" or "friendly" investments (in case of several owners of business). These investment sources are called "FFF" investment which is the abbreviation for "family", "friends" and "fooks".
4	Storytelling (grounding of business model components)	
5	Business model acceleration (from Latin «acceleratio» – hastening)	One of the most cost-based, risk hazardous and lasting stages in the enterprise business model life cycle. Alternative forms of this stage financing are: 1) receiving educational grants; 2) financing by investment angels (people who invest their own funds at the primary stages of development and who promote business model at the market (Gerasimenko, 2013); 3) financial resources of venture capital funds (companies which raise funds, estimate efficiency of business model and invest in it (Kempel, 2008); 4) crowd funding (collective financing) – the collective cooperation, attention and trust by people who network and pool their money and other resources together, usually via the Internet, to support the development of a certain business model, usually with no hope for return (de Feniks and Peverelly, 2012).

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N	The stage of business model building	Characteristics of possible financing models (GACEBT)
6	Start-up preparing	At this stage financial investment, related to consumers' markets research and determining the best possible segment, is low. The financing problem can be solved by means of short-term investment for circulating capital replenishment in case of the lack of financial resources, given the 5 th stage of business model building.
7	Choosing the business model format	At this stage there is no need for financing, because it presupposes the choice of a certain form of sales depending on strategic targets.
8	Introduction into the market	The peculiarity of this stage financing is possibility of tax credit, factory financing or forfeiting (Folomyev, 2001).
9	Primary sales	At this stage there is a need for financing the business model image making. The need in financing can be covered by franchise mechanism of financing.
10	Business model stabilization	At this stage there is a need for long- or midterm, hazardous and significant investment. The list of alternative ways of financing shown in 8 th and 9 th entries can be added by the great rôle of mezzanine capital in order to maintain the business model competitiveness at consumer's market.
11	Extensiveness of business model efficiency	At this stage of business model building in consequence of risks reduction the enterprise can afford any kind of investment, including bank crediting, foreign direct investment, except emissive one.
12	Socialization of business model (degradation or transformation)	At this stage enterprise has high expenditures for maintaining the business model competitiveness which is caused by high competitive level at the market. It requires business model transformation according to business environment conditions (in case of full loss of competitiveness the business model suffers degradation and thus the enterprise has to change its key activity, and, consequently, develop innovative business models). Investment sources for these purposes depend on financial situation of the enterprise and the potential for its development.

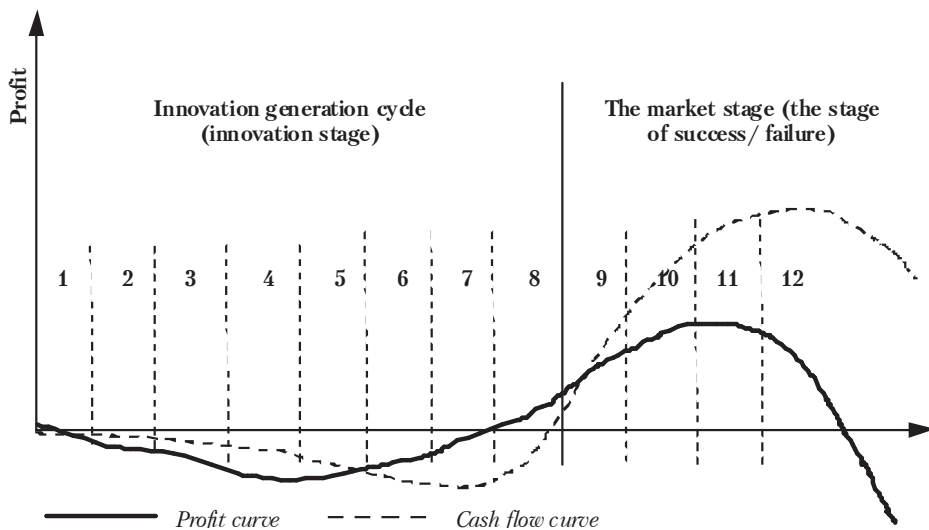


Figure 3. Principal stages of enterprise business model innovation, compiled by the authors'

To estimate the change of enterprise value we suggest using the index of economic value added modified by the authors (Popkov and Evstafeva, 2007):

$$NPV_c = (\Delta PN_n + EE_n - I_n + T_n) \times r, \quad (1)$$

where NPV_c is the net worth of updating/reengineering of enterprise business model; ΔPN_n – extra amount of profit obtained from updating/reengineering of enterprise business model; N – a period of time after updating/reengineering of the enterprise business model; EE_n – the current costs savings due to change of business activity; I_n – complementary investment connected with updating/reengineering of the enterprise business model; T_n – rise (savings) of tax payments; r – current value ratio.

According to the formula, market value of an enterprise can exceed the value of owned capital depending on the ratio of future enterprise profit. The value of NPV_c determined 3 alternative ways of investor behavior (the owner of the enterprise) concerning the financing of updating/reengineering of the business model:

- $NPV_c = 0$, i.e. $\sum(\Delta PN_n, EE_n) = \sum(I_n, T_n)$ and the market value of an enterprise equals the value of net worth. In this case the market gain of investor from investment in updating/reengineering of the business model becomes 0 as the amount of extra profit and cost savings completely covers complementary investments and tax payments on updating/reengineering of the business model of an enterprise;

- $NPV_c > 0$ means the rise of market value of the enterprise after updating / reengineering of its business model;

- $NPV_c < 0$ leads to diminution in market value of the enterprise because complementary investment and tax payments on updating/reengineering of the enterprise business model cannot be covered by extra profit from business model implementation and there is no current cost saving. Under these conditions it is necessary to solve the problem of finding new ways of the enterprise development (i.e. new business model building) on the basis of identification of key peculiarities of the enterprise concerning its development processes.

Therefore, the assessment of the index NPV_c allows to determine the ratio of the possible value increase of the enterprise after updating/reengineering of its business model.

The logical statement of the task to maximize the value spread (or additional value increase) expressed by the function F , can be interpreted in by the following economic and mathematical model:

$$\begin{cases} F = NPV_c \rightarrow \max \\ \sum(\Delta PN_n, EE_n) > \sum(I_n, T_n). \\ \Delta PN_n > 0 \end{cases} \quad (2)$$

The limitation of the model is the positive value of profit obtained from updating/reengineering of the enterprise business model and overrun of the market value of the enterprise over the owned capital value.

According to this, we can draw the following **conclusions**:

1. The acceleration of integration processes causes the necessity for rapid response to business environment changes and timely management decision-making on updating/reengineering of the enterprise working business model. It causes the necessity for its management at each stage of its building, and for each stage its certain financing model is typical.

2. The assurance of efficient development of the enterprise and integration of its business activity are only possible under the conditions of timely innovation updating (or engineering) of the working business model. The task of strategic development of the enterprise can be solved by management of business model innovation at the stages of its generation and diffusion. After it there is a possibility to control the enterprise market value.

3. The key aspect in the expediency of updating/reengineering of the enterprise business model (in the nodal point of decision-making on determining the focus of the task development trajectory of the enterprise) is the implementation of an economic mathematical model, developed by the authors, on the basis of which it is possible to determine the value spread. The index NPV_c serves as an element of decision-making on updating/reengineering or degradation of the enterprise business model. The developed model allows maximizing the market value of the enterprise due to assurance of the maximum positive effect from updating/reengineering of the enterprise business model.

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КНИЖКОВИЙ СВІТ

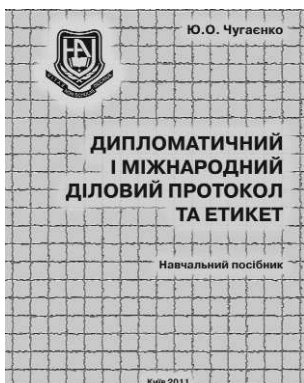


СУЧАСНА ЕКОНОМІЧНА ТА ЮРИДИЧНА ОСВІТА
ПРЕСТИЖНИЙ ВИЩИЙ НАВЧАЛЬНИЙ ЗАКЛАД
НАЦІОНАЛЬНА АКАДЕМІЯ УПРАВЛІННЯ

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Дипломатичний і міжнародний діловий протокол та етикет: Навчальний посібник. – К.: Національна академія управління, 2011. – 164 с. Ціна без доставки – 25 грн.

Автор: **Ю.О. Чугаєнко.**

У навчальному посібнику викладено основи дипломатичного і міжнародного ділового протоколу і етикету, з історією становлення української протокольної практики і протокольної служби.

Призначений для студентів, що вивчають спецкурс "Дипломатичний і міжнародний діловий протокол та етикет", а також для широкого кола осіб, яким за родом діяльності доводиться контактувати з іноземними установами, організаціями та громадянами.