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SYNERGIC SYSTEM OF OPERATIONAL, FINANCIAL AND SALES MANAGEMENT

SINERGIJSKI SUSTAV OPERATIVNOG, FINANCIJSKOG I PRODAJNOG UPRAVLJANJA

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Abstract

This paper's fundamental goal is to present a possible synergic system of operational, financial and sales management of a company which strives to maximise the owner's capital value. In order to fulfil the set goal, the starting point in this paper is an explanation of the system, the term of synergy and the necessity for establishment of a possible Synergic System of Operational, Financial and Sales Management (SSOFSM), with the aim to reduce risks and increase investment efficiency. In this sense, its mathematical model is defined with the presentation of transformations and processes within the said System, as well as the analytical expression of its technical, technological, organisational, algorithmic and managerial configuration. In the end, it is concluded in the paper that a better quality company resource management is needed in order to reach its goal, in which the presented Synergic System of Operational, Financial and Sales Management can play a significant role.

Sažetak

Temeljni cilj ovog rada je predstaviti mogući sinergijski sustav operativnog, financijskog upravljanja i prodaje tvrtke koja nastoji povećati vrijednost kapitala vlasnika. Kako bi se ispunili postavljeni ciljevi, polazište u ovom radu je objašnjenje sustava, pojam sinergije i potreba za uspostavom mogućeg sinergijskog sustava operativnog, financijskog i prodajnog menadžmenta (SSOFSM), s ciljem smanjenja rizika i povećanja učinkovitosti investicija. U tom smislu, definiran je matematički model uz predočenje transformacije i procesa unutar navedenog sustava, kao i analitički izraz njegove tehničke, tehnološke, organizacijske, upravljačke i algoritamske konfiguracije. Na kraju, zaključeno je da je bolja potrebna bolja kvaliteta za upravljanje resursima kako bi tvrtka postigla svoj cilj, u kojem predstav sinergijski sustav može igrati značajnu ulogu.

1. INTRODUCTION

The basic goal of each company which operates in the market economy and which is predominantly or entirely privately owned is maximisation of its ownership capital value. A company reaches its goal by means of using its resources (capital, people, organisation, etc.) in the best possible way, i.e. it realises synergic effects /**1**/ in its work and development. The synergic effects in work are achieved by the efficient use of set and needed variables (property, people, organisation, etc.). In order to realise maximisation of ownership capital value within a specific period of time, there is a great probability that a company will need benefits from the developmental, i.e. financial cycle. As, by investment, very often large capital is engaged for a longer period of time, this means that even the most important (absolute and relative) synergic effects can emanate from the investment. Engagement of large capital for a long period of time, however, in modern economic systems with dominant globalisation characteristics (so to speak, more or less a united world market) is necessarily related to risks. Modern (globalised) economic systems are composed of a large number of varia-

bles (political stability, state, regions, economic and political regimes, people, technologies, infrastructures, etc.). Those variables are not stable and they change fast their value, intensity, direction and similar, thus becoming hard to predict /**2**/. This is why companies in the modern global economy obtain greater developmental possibilities, but also greater risks, making the necessity to achieve synergy greater. Synergy, which emanates from relationships among system variables, affects risk reduction and increase in investment efficiency (system development).

2. SYSTEM OF INFLUENCES AND INDICATORS OF BUSINESS UNITS IN COMPANIES

Each business system is perceived as an ordered set of elements and relationships, principles or objects which, in mutual interaction, realise a function of the whole. The system consists of a minimum of two elements. Depending of the nature of an element, we distinguish abstract and real systems. Abstract systems are made up of non-material elements and real systems, of material ones. Everything outside a business system and which is important for is functioning, is called the environment. A business system maintains material, infrastructural and information relationships with the environment.

System elements and their relationships determine the system structure and function, which transform incoming resources into outgoing results. In this transformation, formal, informal, external and internal influences and power sources in the business system are established. Influence systems in a company are designed at several levels. The first level consists of a control system, dominated by the owner by means of setting up of a vision and business policy. The second level is made up of the company's Board of Directors with their work rules, indicators, processes and methods. The third level is composed of a bureaucratic ideological and political control system. To achieve synergy in company work and development, it is necessary to create a synergic system which is made up of business units, such as operations (production), finances and sales (various combinations are possible in the organisational structure in the sense of area positioning, like acquisition, product development, human resources and similar, but for the needs of this paper, we are of the opinion that these areas in the organisation are placed in one of the previously quoted business units).

Each company forms a business system. A system of processes which are mutually dependent and hard to separate are in force in a company /**3**/. According to the General Systems Theory, a system is perceived and studied through a synthesis with its environment. The Theory deals with research of systems and regularities which reign within it. In that sense, the main system values have been established. They are:

1) System elements are interlinked,
2) Elements of the whole are observed through the functioning of the whole and not separately,
3) In mutual interaction, system elements are oriented towards functionally perceived goal achievement,
4) Each system is in interaction with its environment from where it absorbs material, energy and information, essential for survival and development, emitting into the environment the results of its work which are also of a material, energy and information nature,
5) The system processes and functions are expressed as a transformation from incoming measures into outgoing, i.e. I = f(U) or I = TU,
6) Each system, into whose maintenance and development energy is not invested, gets into a state of a growing entropy,
7) By means of feedback, i.e. comparison between real outgoing and targeted (desired) results, the systems ensure reaching their goals by regulation processes,
8) Each system is structured hierarchically as a part of a greater system and, on its own, it consists of subsystems, i.e. elements,
9) With time, system elements differentiate and specialise for their functions, and
10) It is possible to achieve the same outcome using different methods and in different ways /**4**/.

Some authors explain the concept of system by answering these three questions: 1) What is its goal? 2) What are its functions? and 3) What does it consist of? /**5**/.

As, in this paper, we focus on the synergy of operational, financial and sales management in order

to reduce risks and increase investment efficiency, we can conclude that this concerns the system, i.e. subsystem of the business system which we will call the Synergic System of Operational, Financial and Sales Management (SSOFSM). Its goal is reduction of risks and increase of investment efficiency; its functions are synergic (complementary) processing of inputs and outputs from the sales, operational and financial complex, with the accent on management. SSOFSM is composed of technical, technological, organisational, alghorythmical and managerial configuration. In accordance with such a perception of the problem in this paper and by the fifth determinant of the General Systems Theory, we can give the elementary definition of the investment process using investment process equations, i.e.

outgoing investment results = transformation of investment inputs (variables) (1)

In modern investment systems, the term of transformation is a wide concept. It includes the following types of transformations of data and information:

1) Definition of relevant data and information - f_1
2) Loading of system with relevant data and information - f_2,
3) Full scale processing - f_3,
4) Processing result transfer – f_4 and
5) Processing result management – f_5.

Consequently, assuming that

$$F = \begin{pmatrix} f_1 \\ f_2 \\ f_3 \\ f_4 \\ f_5 \end{pmatrix} \qquad (2)$$

is a processing operator complex which functions above the incoming investment variable (data, information) x and its result is the outgoing investment variable (data, information) y. Hereby its elements f_i, i = 1, 2, 3, 4, 5 are basic operators (transformations), which are activated depending on incoming and outgoing variables. $X(t) = \{x_i,t\}$ is the area of all incoming investments at the moment t and $Y(t) = \{y_j,t\}$signifies the area of outgoing investment measures. In a general case, activation of a specific operator (of processing) depends on indexes, "i" and "j". If we generalise this, it will be $f_k^{ij} = \{f_k^{ij}\}$, final set of operators which can be induced from x_i and y_j at the moment t. Based on this, the investment process at the moment t can be presented as a set of investment and processing equations,

$$Y(t) = F(t)\,X(t) = \begin{vmatrix} f_1(t) = \{ f_1^{ij}(t)\} \\ f_2(t) = \{ f_2^{ij}(t)\} \\ f_3(t) = \{ f_3^{ij}(t)\} \\ f_4(t) = \{ f_4^{ij}(t)\} \\ f_5(t) = \{ f_5^{ij}(t)\} \end{vmatrix} X(t) \qquad (3)$$

which, in our case, in the investment period [0, T] facilitates encirclement of all investment processes which include operations, finance and sales in the realisation of the set goal in the form of

☺ Y(t) = F ☺ X(t), gdje je t ☺☺☺☺☺☺☺☺☺☺☺

The synergic investment process definition (3) is of the type "entry-exit" provided the condition Y(t) = IRR > WACC /**6**/ has been fulfilled. The substrate of the entry-exit flow is a variable (information), for example, like in partial synergic processes:

service sales realisation = quantity vector x achieved sales price vector

which is the example for the operator f_3. Such transformations require technical, technological, organisational, human, financial and managerial configurations, as well as other conditions as the SSOFSM co-factors. We mark all these measures with C_0 $x(t) = \bar{x}$ (t) and they mean non-dominant synergic investment inputs which enhance the process (3). For such inputs, we can expect the operator equation

$$\left.\begin{aligned} \bar{y}(t) &= \bar{F}(t)\,\bar{x}(t) \\ \bar{F}(t) &= \Phi\,[F(t)] \end{aligned}\right\} \qquad (5)$$

which, together with (3), gives the formal definition of SSOFSM. Operator $\bar{F}$ is also an operator complex dependent on F.

It is necessary to mention that the system of relations (3) ∘ (5), with $\bar{F} = \Phi(F)$, defines so-called synergic and investment system with an offensive architecture. It determines co-synergic operator complex as the consequence of the synergic cooperation complex.

It must be stressed here that, especially in practice, it occurs only too often that synergic investment operative has almost exclusively those processes, while neglecting corresponding induced co-synergic processes. The reverse also applies.

The considered SSOFSM analytics can also be observed from the point of view of information systems and information and co-information processes within them, which is, to a greater detail, given by the pure information theory. /7/

3. BUSINESS PROCESSES SYNERGY

We will observe the SSOFSM from the aspects of 1) technical, 2) technological, 3) organisational, 4) algorithmic and 5) managerial configurations and provide their analytical expression.

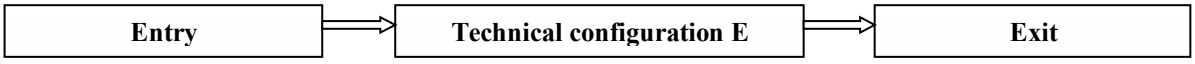
(1) Technical configuration

Starting from the SSOFSM definition, its technical configuration is composed of means and people who process inputs. It is because of this that the operator F(t) with five segments is introduced. In that sense, we are dealing with standard terminology/concepts, namely:

1) Tools for information retrieval (methods of search of data bases, reports, surveys and interviews, information systems, archives, etc.),
2) Tools for information transfer (computer and telecommunication networks, fax, telephone, etc.),
3) Software for information transformation (computer system elements, system and application programmes, etc.),
4) Tools for information storage (memory methods, microfilming, photocopying, digitalisation, etc.) and
5) Software for use of information (management information system elements, expert system, etc.)

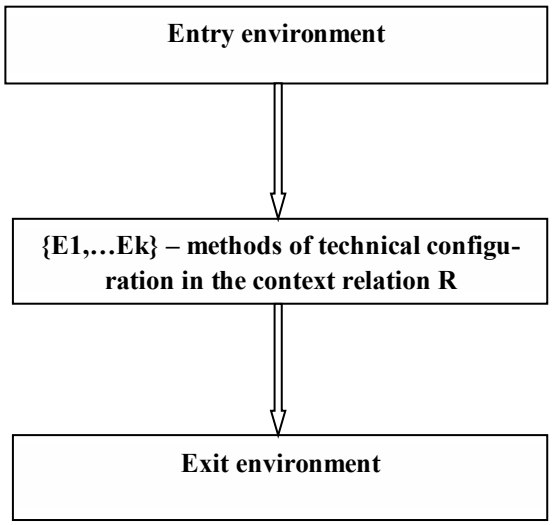
Assuming that these methods are elements of the set E. For the purpose of stratification of synergic investment processes, that set represents a technical configuration, whose purpose is presented in Scheme 1.

Scheme 1. Technical configuration purpose in synergic investment process



Assuming that $E = \{E_1, ..., E_n\}$ is a definition set of technical configuration elements of the associated graph $(E,R) = G$ (figure 1.).

Figure 1. Methods of technical configuration in the context of relation R



For the purpose of comprehensiveness, assuming that each element of the set $E=\{E_k\}$ has at least one non-dominant synergic characteristic (speed of information retrieval, operation speed, display speed, printing speed, memory capacity, etc.). We mark with L_E the set of all those non-dominant synergic technical element characteristics and we will call

(E, L_E) (1.1)

technical configuration.

(2) Technological configuration

If in the technical configuration (E, L_E) we choose a pair (x_i,y_j), i.e. transformation (work), it activates the process operator $f^{(ij)}$ ☺☺F, whereby the following subset is also induced

$E^{(ij)}$ ☺☺☺ ☺☺☺☺☺☺☺

as well as a corresponding part of relations☺

$R^{(ij)}$ ☺☺R (2.2.)

so a sub graph is obtained

$G^{(ij)} = (E^{(ij)}, L_{E(ij)}, R^{(ij)})$ ☺☺G (2.3.),

which we call the ***technological configuration***.

In a moment of time t, a family of technological configurations

$\{G^{(ij)}, t\} = \{(E^{(ij)}, L_{E(ij)}, R^{(ij)}), t\}$ (2.4.).

belongs to the totality of stratification investment processes (4)

(3) Organisational configuration

Assuming that technical and technological configurations are defined as above. In each technical configuration, there is a family of many possible technological configurations G_{ij}. In the given time t, some $E^{(ij)}$ from $\{G^{(ij)}, t\}$ are activated, while others are not. The allotment of activities of individual $E^{(ij)}$ of the given technological configuration is called organisation of synergic investment process. Assuming that E_k ☺ $E^{(ij)}$ is activated in time t, let ☺$_k$ = 1. If not activated, then ☺$_k$ = 0. Along with existence of E_k (when ☺$_k$ = 1), also L_{Ek} exists and all relations between E_k and other $E_{k'}$, k☺☺☺k′, from $G^{(ij)}$ also exist. This is how synergic investment system ***organisational configuration*** is obtained, which reads

$\{G^{(ij)}, t\} = \{$☺$(E^{(ij)}, L_{E(ij)}, R^{(ij)}), t\}$ (3.1.)

where ☺ is the operator of existence for $E^{(ij)}$. Organisational configuration represents a concrete possible state of technological configuration.

(4) Algorithmic configuration

For each $E^{(ij)} \in E$ in time t assuming that algorithm F_{kij} is defined, which is conditioned by pair (x_i,y_j). Selected operator F_{ij} from (2) is marked as compositum

$$F_{ij} = F_{1\,ij} \circ F_{2\,ij} \circ ... \circ F_{k\,ij} \circ \dots \circ F_{m\,ij} \quad (4.1.)$$

Algorithmic configuration is defined using decomposition (4.1.) in the way that operators $\{F_{k\,ij}\}$ are added to the basic graph belonging to the organisational configuration at corresponding nodes E_k and it reads

$$\{G^{(ij)}, \{F_{ij}\}, t\} = \{\Subset(E^{(ij)}, L_{E(ij)}, R^{(ij)}), \{F_{ij}\}, t\} \quad (4.2.)$$

Algorithmic configuration too is a dynamic category, as in each time t, algorithm configuration (4.2.) belongs to the synergic investment system, that configuration does not exist. If, within the synergic investment system, there is no a system synergic investment process, there is no transformation of measures (information) either.

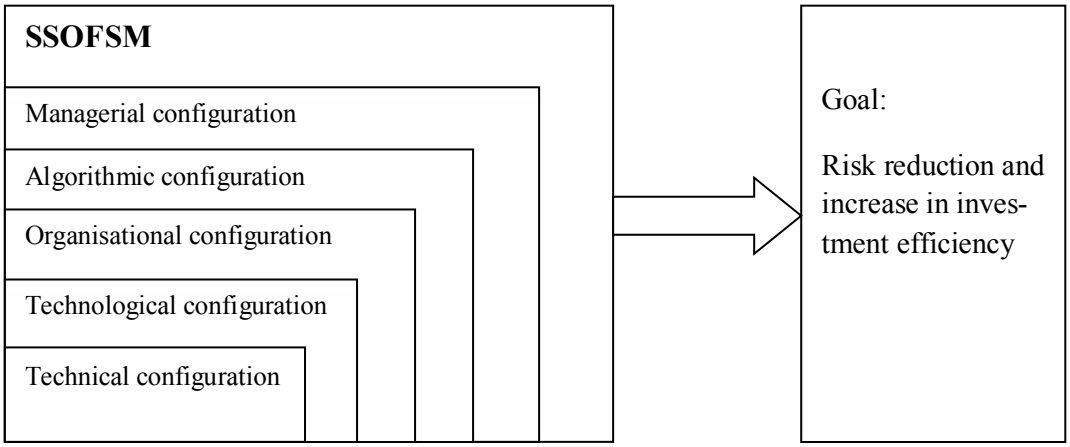
(5) Managerial configuration

The practical SSOFSM aspects require narrowing of the definition (4.1.) to those of $E_k \in E$, which make up the organisational configuration graph. Algorithmic configuration in real synergic systems is always founded on organisational configuration for each individual time moment t. Organisational configuration is defined upon technological configuration, which, on the other hand, has as its basis some technical configuration. Within each stratification sphere of synergic processes in the SSPOSM, management is present (decision making), which can be called managerial operators M_{ij} and thus managerial configuration can be defined as

$$\{G^{(ij)}, \{F_{ij}\}, \{M_{ij}\}, t\} = \{\Subset(E^{(ij)}, L_{E(ij)}, R^{(ij)}), \{F_{ij}\}, \{M_{ij}\}, t\} \quad (5.1.).$$

Following the aforesaid, in the context of the set goal, the SSOFSM can be presented graphically as per scheme 2.

Scheme 2. SSOFSM in the context of the set goal



By establishing the SSOFSM, we create conditions for risk reduction and increase in investment efficiency in business subjects. As investment is effectuated during the time when system variables change, thereby also the area in which synergic effects reign, it is necessary to constantly efficiently manage the business system in order for the SSOFSM to be sustained in the synergy area.

4. CONCLUSION

Acceleration of business processes, increase in possibilities and risks (globalisation), as well as the

development of knowledge and technologies impose the need for a better quality resource management, generally speaking. Quality resource management necessarily also means achievement of synergy in the system element management, generally speaking. Investment should result in development. A developed investment system contains: algorithmic, identity, quasi-identity, generative and managerial transformations. As achievement of synergy is essential for the development, it is necessary to define, organise and implement the SSOFSM (synergic system of operational, financial and sales management).

Notes

/1/ Synergic effect is expressed symbolically as follows: 2 + 2 = 5. (http://wmd.hr/rjecnik-pojmovi-e/web/efekt-sinergije, downloaded on 07.04.13).

/2/ Šehanović, I. (2010): Some of the planning and evaluation problems of investment projects, Menagement, izobraževanje in turizem – družbena odgovornost za trajnosni razvoj, Univerza na Primorskem, Fakulteta za turistične študije Portorož TURISTICA, Portorož, Slovenia, str. 31.

/3/ Kern, T. (2001): Identifikacija ključnih procesov v poslovnem sistemu – pogoj za uspešno prenovo, Zbornik posvetovanja z moderno udeležbo 20. Znanstvenog posvetovanja o razvoju organizacijskih ved „Management v novem tisučletju“, Univerza u Mariboru, Fakulteta za organizacijske vede, Založba Moderna organizacija, Portorož, str. 313.

/4/ Srića, V. (1990): Informacijske tehnologije i organizacija budućnosti, Informacijski sistemi u uredskom poslovanju, DRIP, Zagreb, str. 18.-19.

/5/ Ibid, str. 174.-175.

/6/ Šehanović, I. (2012.) Doktorska disertacija, Sinergija operacijskog, financijskog i prodajnog menadžmenta u funkciji smanjenja rizika i povećanja efikasnosti investiranja u hotelijerstvu (mentor profesor emeritus Dražen Barković), Sveučilište Josipa Jurja Strossmayera u Osijeku, Ekonomski fakultet u Osijeku

/7/ Ibid, str. 7.-9.