

STANDARDIZATION OF BUSINESS DECISION-MAKING

*Vojko Potočan**

Received: 20. 08. 2000.

Original scientific paper

Accepted: 22. 11. 2000.

UDC: 658.5

Enterprise as a business system (BS) assures its own existence and development by a high quality of its business. Its business results can be considerably improved, if the BS creates its system of the standard decision-making processes (DM), which provides for a high quality of business DM and its methodological uniformity in different BS's. Within the standardisation, we establish both a standardised research methodology and a standardisation of contents, and develop a system of standardised DM processes in the BS. We uniform the DM by both a holistic methodological and a partial contents standardisation. We define it on the basis of our holistic investigation into it, which includes the institutional, functional, and factors aspects. These factors are defined and distributed in the fields of DM and both the general and the special standard systems of DM factors are developed. We study the DM process thoroughly, while the acquired knowledge on the process is formalised and developed into a cybernetic model. A general system of DM and its corresponding model is created in order to provide for the requisite holism and complexity of DM, as well as the uniformity of its consideration. The selected problem is solved when we complete the standardisation of the DM, which includes the conception of the standard methodology, its application and the development of its standardised manner.

1. THE SELECTED PROBLEM AND VIEWPOINT

Business systems (BS's) can, within globalisation, assure their existence and development only by a high-quality operation. However, the majority of BS's do not operate entirely rationally, and their actual business results are, as a rule, smaller than they realistically expect [1; 5].

* Vojko Potočan, Ph. D., Senior Lecturer of management and organisation, University of Maribor, School of Business and Economics, Razlagova 14, SI-2000 Maribor, Slovenia, Phone + 386 2 22 90 255, E-mail: vojko.potocan@uni-mb.si

For this very reason, the goal of a BS is to adequately create a high-quality business operation which will be (1) successful (efficient and effective in economic terms), (2) respected (from the aspect of business behaviour), and (3) ethical (morality adequate from the viewpoint of a responsible attitude towards the social and natural environment) [10].

The operation of BS can be improved in various ways (i.e. through the impact on the operation, organisation, factors and relations - internal and external). From all possible solutions, we selected, for our discussion, the field of management that determines possible results of business operation and presents the least studied field of business operation. In the circumstances of restricted available production factors and given operation conditions, business operation can mainly be influenced by the improvement of the autonomous part of management, e.g. of business decision-making (BDM) [2; 6]. DM presents the central phase of the management process-taking place in all phases of the business operation process. The important impact of the DM on business operation results in the [2; 5]: a) Integration role (DM is a component of all business functions linking business operation processes into a synergetic entity); b) Interdisciplinary nature (DM integrates phenomena with diverse characteristics dealt with by various scientific disciplines); c) Standardisation role (by DM, we can significantly uniform the operation of activities in all parts of a BS and in the BS as an entity) and d) Important impacts on the BS's relations (the relations between the DM and partial or sub-system/s of DM, between the entire DM process and its partial or sub-processes, as well as between the BS and its environment).

DM in a BS significantly influences (indirectly or directly) the choice of objectives, goals, processes, and the construction of components and structure of the BS as well as the use of monetary, material and human resources. Its development determines the adequacy of management and has, thus, a direct impact on the definition of goals, direction of business policy and, consequently, on the achievement of business results.

The purpose of our research is, therefore, to create a suitable system of the standardised DM processes of the operation of enterprises, which shall ensure an appropriate ("optimal") quality of BDM and the base for the methodological unification and comparability of DM in different BSs [8]. Should we attain our purpose of research, a number of goals must be achieved. We must define theoretical starting points for a consistent treatment of BSs from the organisational, management, and DM viewpoints, which will make possible the creation of a holistic management system. This is followed by the formation of

theoretical starting points for the conception of a general system of decision-making processes, which will provide the standardisation of development and the application of a standard process and of the model of DM matching the needs of the standard system of DM development. The research is completed by the creation of a (requisitely) holistic system of BDM.

Presentation of the entire research surpasses the framework of this contribution. We shall restrict ourselves to the treatment of starting points for the DM standardisation, to the development of a general system of BDM and the formation of the model of a standardised decision-making system.

2. STARTING POINTS FOR THE STANDARDISATION OF BDM

During the last two decades, the investigators of DM have been oriented towards the evaluation of concepts, which are supposed to assure a holistic definition and corresponding results of DM [1; 5]. In the creation of different up-to-date concepts, the authors stem from general starting points that are related to the interdisciplinary, holistic and standardised DM [10].

Comprehension and definition of DM can be considerably upgraded by a transdisciplinary and interdisciplinary treatment [8]. Transdisciplinarity indicates a theoretical approach to research, which presumes that specialists do not try to consider their own discipline only and the solution includes a number of different disciplines. On the base of interdisciplinarity, one creates an approach to research of DM that links a number of different disciplines in a synergy. The research is based on the interdisciplinary co-operation of mono-disciplinary sciences. The application of such a treatment enables the realisation of the strength (advantage) of every specialist and of the synergetic interdisciplinary treatment of the issue.

Holism presents the second important starting point of modern DM [4]. An adequate holism is achieved by the consideration of the majority of important sciences included into design, operation and organisation of DM. Our work is based on the cognition of the DM theory (which includes a number of normative, prescriptive and descriptive theories), as well as on other sciences (which are necessary for a specialised DM treatment). Herein, corresponding concepts, approaches and DM models are taken fully into account. Standardisation, e.g. a (framework) unification and a general definition of DM also present a major starting point of modern DM theories [7; 9]. For the implementation of standardisation, it is impossible to directly apply the well-known methods and develop BDM systems. These methods are target oriented

to the individual business operation fields and designed for the support to the individual management segments. For this reason, a holistic methodology of DM is planned enabling the formation of uniformed starting points and the application of the standardised DM and, thus, also directly influencing the evaluation and performance of the already existing methods.

A number of starting points are defined on the grounds of the carried out investigations and experiences for standardisation. For business DM, it is both possible and necessary to design methodologies of the standardised DM management. BDM ought to be organised on the basis of requirements and needs of the entire business operation management. The system of BDM in an individual business system must, nonetheless, meet its specific requirements and needs, but it can be expediently formed according to the standardised base. From the standpoint of BDM, it is possible, in general, to define all necessary methods and techniques used in DM and in groups inside the same DM processes.

It is possible and necessary to design a system of standardised DM processes for a successful BDM. Within the framework of the individual types of production and the forms of organisation, it is possible to create a permanent system of BDM and to incorporate it into the organisational model. In such a BDM system, the DM processes can also be standardised to a certain extent. A permanent (fundamental) construction of a process can be additionally defined for DM processes. Considering a planned standard model of BDM, it is possible to uniformly study all BDMs.

For a high-quality BDM, it is possible to create an entire system of general BDM. A permanent (fundamental) construction of a BDM can be generally defined for DM systems. A DM system and its partial or bus systems can be, to a certain extent, uniformed and standardised. Within the individual types of production and forms of organisation a standardised system of BDM can be created and built into the organisational model. Various BDM systems then are uniformly investigated by the application of a developed standardised DM system.

For DM in business systems, we can design a system of standardised DM and create a cybernetic model of DM. Standardised BDM can be, to a certain extent, formalised. For BDM, we can create starting points for its cybernetisation. On this basis, the system of standard DM processes can be also developed into a corresponding cybernetic model.

Success in business management can be attained by an adequate and high-quality DM. The system of high-quality DM presents a part of the whole business operation management system. The DM's quality is founded on the holistic evaluation of the BDM and its results. The treatment of the DM standardisation is based on the presumption that it is logical and possible to: a) Completely unify DM from the methodological viewpoint and respectively design a standard methodology (by the development of DM methodology), and b) Partially standardise also the decisions made from the content aspect (by the standardisation of DM). Research on DM involves, therefore, evaluation (and development) of the entire methodology of DM together with the direct standardisation of DM. The entire methodology of DM is illustrated in Figure 1.

The investigation is initiated by the creation of the entire methodology of the treatment of BS, which we used to define BDM. Within the framework of the methodological standardisation of DM, we design a standard methodology of research that includes:

- a) Standardised starting points for DM;
- b) Standardised treatment of DM;
- c) Standardised solution of DM;
- d) The models of standardised DM solutions and
- e) The entire holistic model of the standardised BM.

The cognition on the starting points and characteristics of DM is then developed into a holistic system of BDM. The resulting methodology is used to carry out direct standardisation of DM. By the application of the standard methodology, we define the starting points and the basic characteristic of the treatment of DM. This is followed by the implementation of the content standardisation of DM. The research is completed by the conception and formation of the target system of the standard DM processes in enterprises.

The analytical presentation of the development and the characteristics of the entire methodology of DM are beyond our selected scope of work. Herein, we shall only, in more detail, illustrate the creation and characteristics of the general system of BDM.

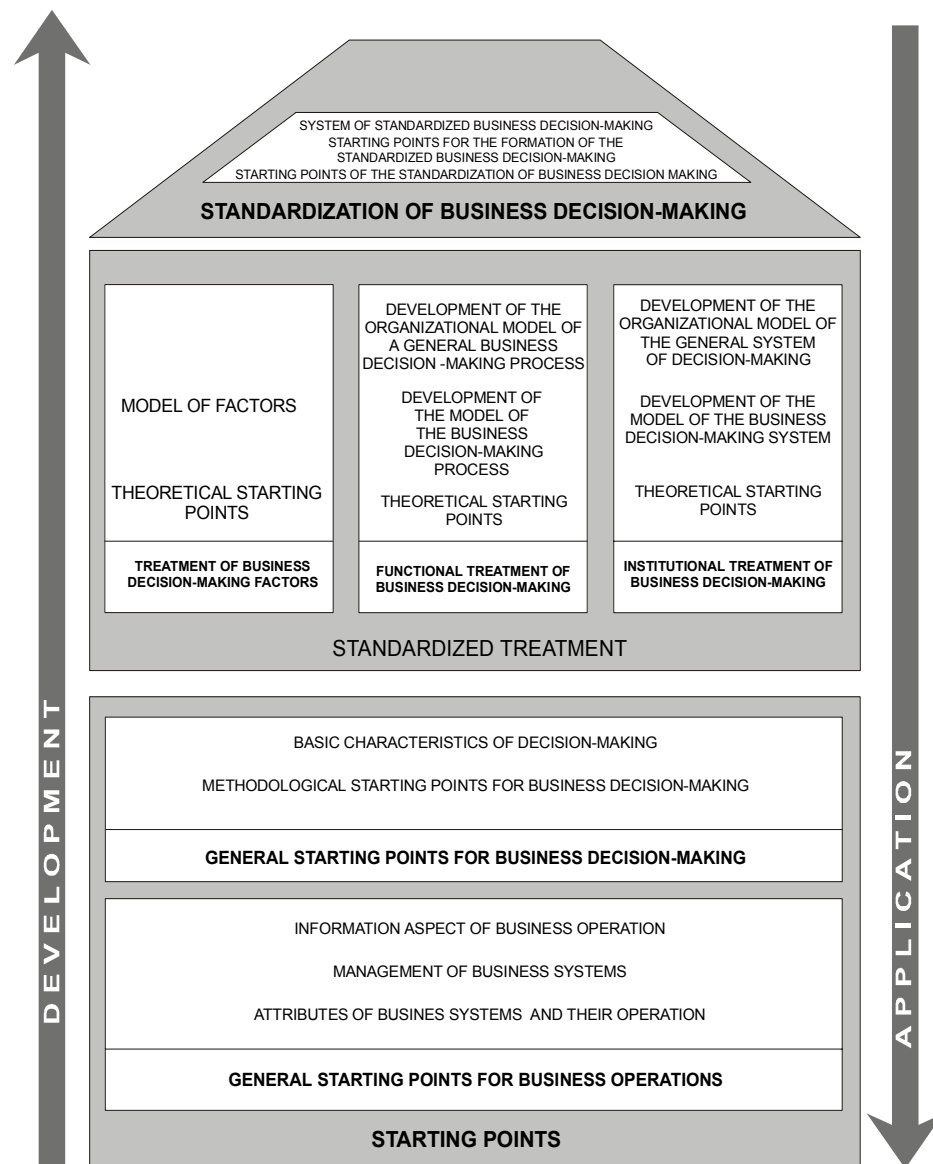


Figure 1: Model of methodology of a standardized business decision-making

3. DEVELOPMENT OF A GENERAL SYSTEM OF BDM

DM can be substantially improved by the development and application of a (requisitely) holistic general system of business DM [7]. The majority of well-known research papers are based upon partial solutions aimed at increasing DM's holism, in order to treat the individual fields of business operation [3; 6]. In solving the selected problem, we replaced partial solutions, therefore, by a general DM system that enables a requisite level of holism and complexity of BDM. A general system is based on the application of the soft systems approach, on the assurance of high-quality DM, as well as on the holistic treatment of DM.

By the holistic systems approach, we want to surpass the partiality of present investigations and to form a treatment that should enable a more realistic cognition, measurement and evaluation of decisions. An adequate holism of DM can be ensured by the application of the SSA (Soft system approach), which includes the examination of the majority of important characteristics of fuzzy and soft systems (and components) as subsystems and/or partial systems. Important characteristics of BDM are determined by research involving the treatment of the institutional aspect of the enterprise's operation (as the system), the functional aspect of the enterprise's operation (as the business operation process), and the aspect of the business operation factors. Logical impact on the business operation is related to the understanding of the business systems as synergetic wholes of the basic, management and information (partial) systems and corresponding (partial) business processes taking place within them.

The general DM system is purposely created to assure a corresponding quality of DM. From the content viewpoint, the quality of DM can be defined as the state of the entire adequacy of DM determined on the basis of requirements and needs of the BS and of its environment. To determine the quality of DM we must study the: a) internal quality (definition of DM adequacy based on the needs and requirements of a BS) and external quality of DM (definition of DM adequacy based on the needs and requirements of the BS environment) and b) total quality (quality of the entire DM) and the partial quality of DM (quality of DM operation, quality of DM organisation, quality of DM factors). The general system of DM can provide a holistic definition of DM for the examination of its factors, processes, systems and their relations. The designed general system of BDM is shown in Figure 2.

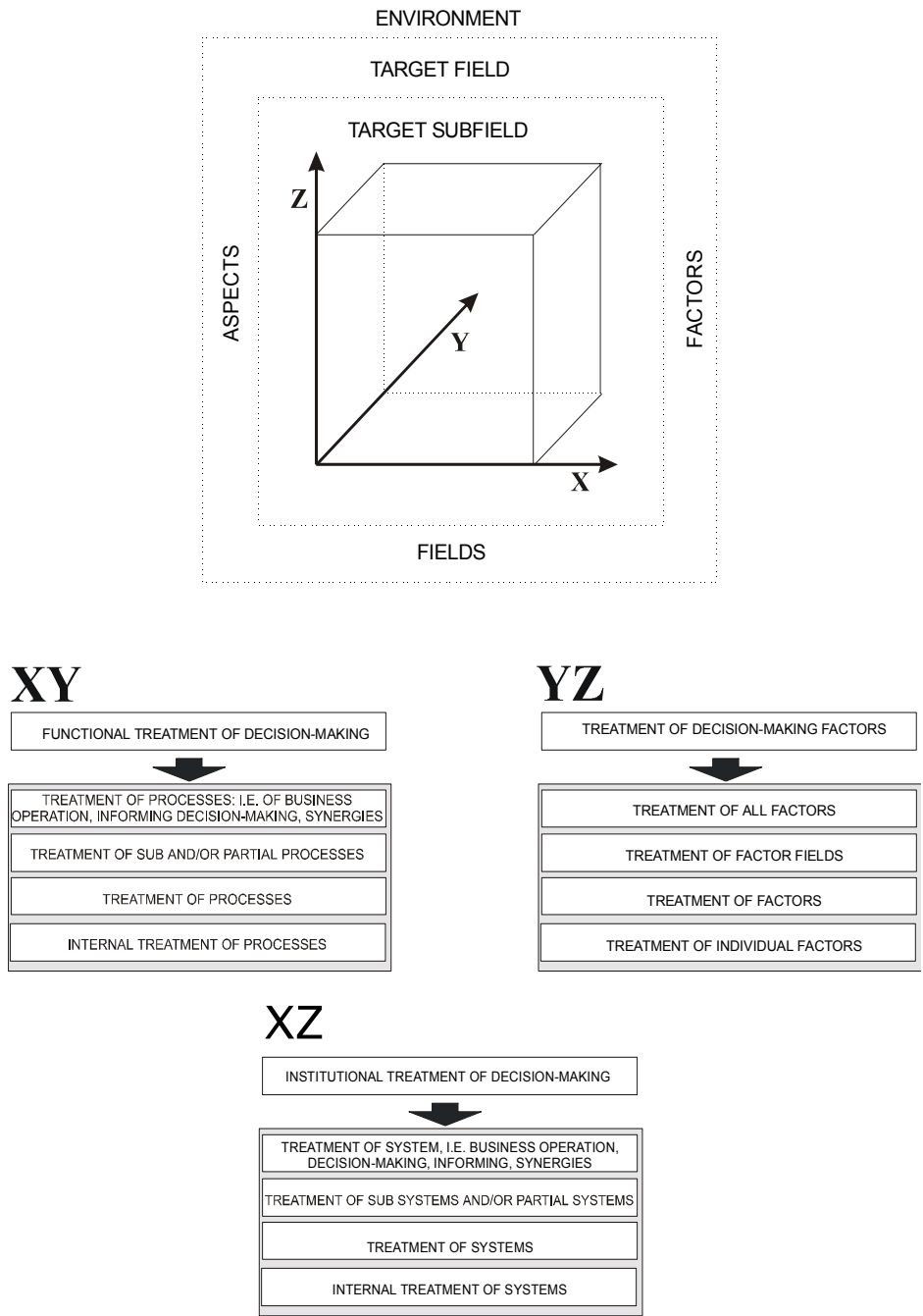


Figure 2. Model of a general system of business decision-making

The factors of operation and organisation also have an important impact on DM. The factors of operation (and of DM) present subjects and objects which cooperate and/or have the influence on business operation (and DM). The fundamental characteristics of factors are defined by the treatment containing the preparation and direct realisation. The significance of BDM factors is defined on the basis of the investigation of their role in DM, on the relation to the nature of DM, and on the possibilities of their definition. In terms of their treatment, they are defined as soft and hard factors.

Functional treatment of DM is defined as a process. The DM process involves five basic phases, e.g. the definition of a DM situation; formation of possible solutions; evaluation of possible solutions; selection of the best solution and implementation of a solution. By the treatment of the individual phases of DM, of DM as a whole and the dynamics of the DM operation, we can define general characteristics of a DM process. On their basis, the process is defined as a synergetic holism of five fundamental phases in which the individual phases present all activities within the framework of definite DM fields.

The DM process can also be, to a certain extent, formalised and can create a cybernetic model. Formally, a DM process can be defined as the composition of five basic DM processes. The processes are taking place subsequently in accordance with a logical process hierarchy and are, at the same time, linked to the open synergetic DM.

Basic characteristics of each process are: set of inputs into the process, the result of the process, which is a set of outputs, and the thesaurus of a DM, which has also a significant impact on the process.

A model of a general process can be developed for DM. The model presents a synergetic whole of fields that participate in DM - e.g. of the business process, of the DM process, and of the functional factors of business operation and of the DM.

Important characteristics of business and DM processes are defined on the basis of the level of research of their activity, on the mode of the operation analysis, on the implementation of analysis, on the definition of processing fields, on the analysis of the operating fields, and on the definition of process operation. The characteristics of the functional factors of business operation and of DM are defined on the basis of the treatment of their role in the system, on the relation to the nature of activity and on the degree of their recognition. For

the treatment, the processes of business operation and DM are defined as holistic processes, sub-processes, partial processes, and sub-processes of partial processes and partial processes of sub-processes. Their relations are presented in the model of co-dependency for the processes of business operation and DM. At the same time, the values of these relations are determined.

With a systemic treatment, an open system is introduced for DM, which presents all system fields incorporated into DM - of the business system, of the DM system and of the systems factors (factors of business system, factors of DM system). The characteristics of the business and DM systems are defined according to the level of research of their organisation, the model of the level of analysis, the implementation of the analysis, the definition of both the BS and DM system(s) fields, analysis of fields, and the definition of the individual systems of BS or DM. The characteristics of the system(s) factors of DM and BS are defined on the basis of the treatment of their role in the DM system, on the relation to the nature of activity and on the level of their recognition. For the examination, the systems of business operation and DM are defined as the holistic systems, sub-systems, partial systems, and partial systems of sub-systems and the sub-systems of a partial system. Their important relations are defined in the model of co-dependency for the systems of business operation and DM and, at the same time, the values of these relations are determined.

The development of the target system of DM is based on the application of modern cognition of systems theory (DM as an open dynamic system, the application of various system concepts, systemic standardisation of DM). DM can be designed by the application of the SSA. SSA offers new cognitions on the holistic treatment of factors (such as of external and internal factors) and of the results of BDM. The results of business decisions can be logically, and from the content viewpoints, defined as an entity of desired and possible results to be incorporated into direct treatment of DM.

The suitability of DM depends (also) extensively on the selection of DM within the treatment. DM is defined as a whole by the examination of aspects of economics, ethics and image. Selected aspects present the parts of a synergetic whole of DM and have a major impact on the achievement of the BDM results. The purpose of the treatment of the economics of DM is to define the level of the whole economic adequacy of DM that is determined on the basis of its efficiency and performance. Treatment of ethics allows us to define the level of the holistic ethical adequacy, or the acceptability of DM in terms of the internal and external ethics of DM. By the image of DM, we can investigate the level of the entire suitability of the DM behaviour determined on the basis of a good

regulation and respectfulness of DM.

Another very important field of the DM system is the treatment of business relations that present the central field of possible synergies of business operation. The discussion of relations is targeting the definition of major relations between business operation and DM, a uniform determination of groups of relations in business operation and the creation of a uniform methodology for the treatment of relations. There are different relations between the elements of business operation (and of DM). They can be, on the basis of their treatment, defined as simple (relations between the basic elements), combined (relations between the individual dimensions of business operation and DM, i.e. functional aspect, institutional aspect, aspect of factors) and complex (entities of relations within the system of business operation and DM).

The general system of business operation offers a further standardisation and research on the fields of concept and formation of the model of the standard BDM.

4. MODEL OF THE STANDARD BDM SYSTEM

Within the framework of the individual types of business operation and the forms of organisation, a general system of BDM can be further developed into the standard system of BDM [9; 10]. Its formation includes a substantial standardisation of DM and the development of a system of standardised DM processes in BS.

A substantial part of BDM is standardised by the examination of its role in business operation and of important characteristics of standardisation. BDM is the central part of business management and, thus, presents its soft and partial processes and systems. The standard treatment of aspects, factors, processes, systems and the relations of DM determine fundamental characteristics.

The status of the DM system within the entire business operation is determined by the model of the systems of BDM in the management of business operation. In the model, we present major DM systems for the management of business operations, we uniformly define the role and the influence of the individual systems inside DM (based on the aspects and fields of treatment), and we determine their mutual relations and present the status of the investigated DM system.

BDM is standardised on the basis of cognition of the decomposition of the current DM and on the development of a new (desired) DM within the composition of a new decisive whole. DM is by decomposition analysed to parts, then the recognised parts are investigated with the standardised treatment and adequately presented.

The decomposition of the target DM is carried out by the bloc method of DM and by the classification of DM. For this examination, we graphically presented DM by the bloc method of DM, which includes the DM blocs, the relations between blocs and the relations of blocs with the environment. For a uniform definition of the recognised DM, a 12-digit classification is created. Classification includes five classification groups. The individual groups provide a holistic determination of the DM structure.

At the levels of individual activities, DM can be substantially standardised in a different scope. At the highest level of activities, DM can be substantially or entirely standardised. Different enterprises form the same or very similar DM fields in accordance with the basic business functions for their activities at the political and strategic level of business operation. In the BSs with a similar production (the same type and form of production), we can, to a great extent, also standardise DM on the operational level of activities. Their business operation is based on a similar process that can be supported by uniform or standard BDM.

A large part of DM cannot be substantially standardised: their characteristics greatly depend on the specific needs and requirements of the individual enterprises.

Such a DM can be mainly standardised methodologically by the application of the standard treatment and a uniform definition of its importance and role in the system of the overall DM. This step is followed by a direct development of the standard BDM system.

DM covering the evaluation of the standard DM system is defined as the entity of corresponding DM components - K and relations - P. Based on the results of the previous investigations, we can classify the DM factors - YZ, DM processes - XY and the DM systems - XZ among the DM components. DM relations - P embrace internal relations - NP and external relations - ZP. By the standard treatment, we uniformly define the K and the P. Recognised general Ks and Ps are formalised and presented by a set of systems of DM.

By the direct implementation of standardisation, we determine standardised components and DM relations and form the entities of the standardised components and relations. With the conception of standardised entities, we determine the importance of components and DM relations that are the component part of each BDM. The components and relations, as well as their entities, are also formalised and presented by a set of systems of DM.

We can also define the basic standard composition of DM or the structure of its components (factors, processes, systems) and relations (internal, external). The mode of DM analysis and the level of DM are uniformly defined by the structure. The structures of DM are formalised and presented by a set of DM systems. The next step is the creation of partial systems of standardised components of DM and relations of DM. By the composition, the known partial DM systems are developed into a holistic system of the standard BDM.

In the standardised system, BDM is analysed at six decisive levels. The first level shows the individual entities of components and relations of DM (a holistic DM process, the entirety of DM factors, a holistic DM system, the entirety of internal relations, and the entirety of external relations). At the second level, they are classified to the fundamental fields of DM components and relations. It is followed by the analysis of basic fields of components and relations of DM. The fourth level is designed for the definition of the partial fields of DM. The procedures of DM are defined at the fifth level. The determination of the individual elements and relations of DM at the sixth level completes the treatment.

The standardised system is founded on a holistic methodological standardisation of DM, and the partial and substantial / content standardisation of DM. Figure 3 illustrates the model of the elaborated systems of the standardised BDM. We conclude the formation of methodology for the standardisation of DM with the implementation of the standard BDM systems into BSs.

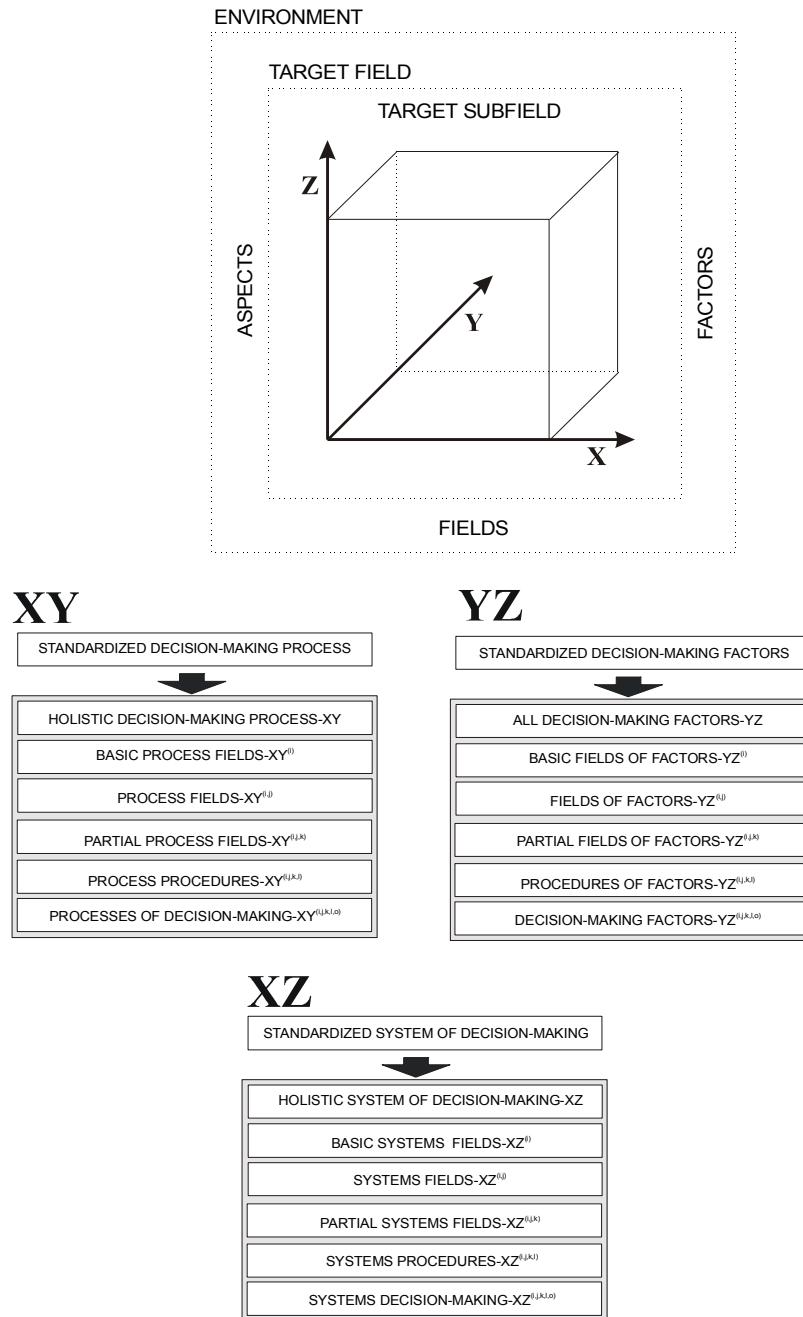


Figure 3. Model of the standardized business decision-making system

5. SOME CONCLUSIONS

The research of the DM system involves the development of a (requisitely) holistic methodology of DM and the standardisation of DM. For this examination, we design a holistic methodology of the systemic treatment, which is then applied for the definition of BDM. Cognition on the starting points and on the characteristics of DM was also developed into the holistic system of BDM.

Within the standardisation of DM, we design a standardised methodology of research and carry out the standardisation of DM. The starting points and basic characteristics of this examination are defined by development and application of standardised methodology. We continue with the implementation of the overall standardisation of DM and with the evaluation of the target system of standard DM processes in the BS.

The created system of the standard BDM process in BS also determines the starting points for a possible completion of theoretical starting points in corresponding sciences (economics, business) to considerably support the BDM. The information of economic and business sciences can be mainly implemented through methodology, which is especially true for their systemic treatment.

The unification will assure the improvement of quality of their operation, and indirectly (also) emphasise their support to DM.

The standard system of DM includes the system of DM quality that provides an entire evaluation of all possible BDMs. The evaluation system takes into consideration the majority of subjective and objective characteristics of different DM, the application of sources and the results of DM. In addition, it also enables the assessment of the majority of significant situations and changes of the economic and non-economic categories of DM that are linked to the phases of DM in its entire life cycle.

The cybernetic model of DM also provides for a higher level of DM automatisation. On the basis of a methodological standardisation and on a partial unification of substantial knowledge, the use of DM can, to a great extent, be supported by adequate techniques and technology.

REFERENCES:

1. Dilworth, J. (1997). *Operations Management: Design, Planning, and Control for Manufacturing and Services*. New York: McGraw Hill Book.
2. Harrison, F. (1995). *The Managerial Decision Making Process*. Boston: Houghton Mifflin Company.
3. Krajewski, L., Ritzman, L. (1996). *Operations Management*. Massachusetts: Addison - Wesley.
4. Marn, F., Mulej, M. (1997). *The Process Approach to Business*. In: *Problems of excavating cybernetic and systems*. Southsea - Amsterdam: *Systemica*, no. 1-6, p. 185-196.
5. Schroeder, R. (1997). *Operations Management: Decision Making in the Operations Function*. New York: McGraw Hill Book.
6. Sikavica, P., Novak, M. (1999). *Poslovna organizacija*. Zagreb: Informator.
7. Potočan, V. (1997). *What Kind of MES is Needed for Innovative Entrepreneurial Decision Making*. In: *Proc. of IDMT '97*, p. 249 - 257. Wien: Osterreichische Computer Gesellschaft.
8. Potočan, V., Kajzer, S., Mulej, M. (1997). *The Standardization of the Methodological Basis of Business Decision-making*. Amsterdam: *Systemica*, no. 1-6, p. 259 - 268.
9. Potočan, V. (1998). *Holistic Decision-making as A Practical Example of Training for Systemic Thinking*. In: *Proc. of IDIMT '98*, p. 329 - 337. Linz: Universitätsverlag Rudolf Trauner.
10. Potočan, V. (1997B). *A New Perspectives on Business Decision Making*. *Management*, vol. 2, no. 1, p. 13 - 24. Split: Faculty of Economics.
11. Potočan, V. (1999): *System of the Standard Decision-Making Processes in An Enterprise* (doctoral thesis). Maribor: Faculty of Economics and Business.

STANDARDIZACIJA POSLOVNOG ODLUČIVANJA

Sažetak

Poduzeće, promatrano kao poslovni sustav, osigurava vlastito preživljavanje i razvoj osiguranjem visokog stupnja kvaliteta poslovanja. Poslovni rezultati se mogu značajno poboljšati, ukoliko se u okviru poslovnog sustava stvori standardizirani sustav procesa odlučivanja, čime se osigurava visoka kvaliteta odlučivanja, ali i njegova metodološka ujednačenost u različitim poslovnim sustavima. Unutar procesa standardizacije, u ovom se radu prezentiraju standardizirani sadržaji tog procesa, kao i metodologija istraživanja, te prezentira sustav standardiziranih procesa poslovnog odlučivanja. Uniformnost poslovnog odlučivanja osigurava se standardizacijom kako na holističkoj – metodološkoj, tako i na parcijalnoj razini, vezanoj uz sadržaj procesa. Ovaj se proces definira na temelju holističkog istraživanja, koje uključuje njegove institucionalne, funkcionalne i faktorske aspekte. Ti se, pak, čimbenici dalje definiraju, te razmatraju opći i specifični standardni sustavi čimbenika poslovnog odlučivanja. Proces poslovnog odlučivanja se posebno istražuje, kako bi se stečeno znanje o procesima moglo formalizirati u obliku kibernetičkog modela. U radu se, nadalje, izgrađuje opći sustav

poslovnog odlučivanja i njemu odgovarajući model, kako bi se opisalo holistično i kompleksno poslovno odlučivanje, te osiguralo uniformno razmatranje ove teme. Problem istraživanja se zaokružuje potpunom standardizacijom poslovnog odlučivanja, što uključuje koncepciju izradu standardne metodologije, njezinu primjenu i standardizirani razvoj.