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Preliminaries of Modern Systems Management Concepts

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Abstract
Modern systems management manages not only systems, but, increasingly, their environments as well. Modern Systems Management Concepts (SMC) are used for this purpose. They are a good basis for further, more modern developments of practical and theoretical management of all systems and their environments of (global) economy. Based on Total Quality Management (TQM) through: (1) Systems Management Theory (SMT) and (2) Systems Management Concepts (SMC), they use modern management methodology called the Tauzović's General Concept (TGC), or in application the Tauzović's General Continuum (TGC), for the further development, whose implementation it has made it possible to develop a certain number of basic, extended, complex and upgraded SMCs. This article provides the analysis and synthesis of SMC with TGC usage. Since the main concepts of management are: (i) competitiveness (why the system exists), (ii) quality (what the system is supposed to ensure) and (iii) efficient flexibility (how the system is supposed to do it), it has been possible to conclude why modern organizations (business systems) exist – to be prosperously competitive, which means that through their modern management, they provide the real things (the what – quality [effective timeliness]) and in the right way (the how – profitably [efficient flexibility]). Modern management ensures faithful customers (consumers, buyers) and loyal managers (producers, employees), i.e. modern prosperous competitiveness of an organization, as a result of the customers' and managers' participation of an organization on a common market.

Keywords
Management, organization, operations, concepts, quality, competitiveness, Total Quality Management (TQM), Tauzović's General Concept (TGC), Systems Management Theory (SMT), Systems Management Concepts (SMC).

Introduction

As an comprehensive process of universal (and modular) objective setting and achieving, continuous modern management improvement leads not only to new innovative management knowledge and more contemporary explanations of its procedures, but also to their detailed insights and possibilities to perform. By applying the principles of modern Total Quality Management (TQM), based on modern technologies (as contemporary [comprehensive] managerial knowledge), modern management research becomes easier to both understand and use. In order for a modern whole (system), which is used for management, to achieve, use, maintain and develop its general (comprehensive) capacity for survival and provide opportunities for its further improvement, i.e. be competitive, the practice of successful organizations (systems) shows that they have invested significant resources into the specific systems prerequisites for the improvement of management processes. The most important structural prerequisites for these purposes may include: 1. (investing in) research and development, 2. integration of resources (people and facilities), 3. finding modern (innovative) management methodologies, and 4. continuous improvement through a comprehensive whole (system and its environment) (Tauzović, 2012c).

In solving practical problems of comprehensive management (research and management [in the narrow sense]) of all types of organizations (organizational systems), as well as business ones, external (progressively known as strategic) appli-

cation of TQM, based on the internal (progressively known as operational) is gaining increasing importance and significance in its everyday use. Among other things, It represents a very good basis for comprehensive innovative redesign processes, as well as modern global and electronic business organizations, as the most international business systems of comprehensive global economy. Among these innovative methodologies, comprehensive management methodology (research, design, maintenance and further development) of business (as a special type of organization systems) system has a particular importance, starting from working unit system (as the basic organization system), then production system, operations system, business organization system, down to market business activity system as separate parts of business systems (environment) market, in which the business organization conducts its business operations, i.e. processes of (production and) sale of products (goods, information, management, services).

The comprehensive process of modern management is characterized by the Systems Management Theory (SMT – as a practical theory that first "raises" [real] data, through information and knowledge, to the level of theory, and then through its extension [or upgrade] "transforms" it into concepts), which is presently being modernized by Systems Management Concepts (SMC) (Tauzović, 2012c). They use the division of a system into: (1) real (physical) and (2) conceptual (abstract) ones. An organization is a physical system, while management uses conceptual system to manage the organization. The physical system is valuable for what it is, and the conceptual system is valuable for what it represents (McLeod, 1994).

The basic division of real systems is the division into: (i) natural, (ii) technical, (iii) organizational and (iv) social. The systems approach (as modern) defines systems as sets of interrelated elements, components or subsystems (with their mutual relations) which, if working in (systems) harmony, can provide effective and efficient synergistic outputs. Therefore, systems approach, as a fundamental (contemporary) methodology, ensures that the system development progresses in the most effective and efficient way (McLeod, 1994). In the systems approach, systems are open (or systems of permissive borders), as opposed to analytical, where systems are considered to be closed. Open systems are influenced by their environment, which may include:

1. **general or external (real[given]) environment** (economic, technical, financial, informational, political, social, etc. – as being parts of the general market), or macro-environment and
2. **working or internal (goal [target]) (determined [adjusted]) environment** (competitors, suppliers, collaborators, customers – as being parts of the goal [target] markets), or micro-environment (Tauzović, 2012a).

Starting from the general and working environment, which can use "conceptual procedures" for management (Kerzner, 2006), suitable for environment part of management, modern systems management is performed at all (spiral) levels of management, in particular: 1) the institutional [top] level (or level of planning – PL), 2) the strategic level (or level of organizing – OR), 3) the operational level (or level of directing – DI) and 4) the control level (or level of controlling – CO), or its separate parts – (1) external (E – levels of planning and organizing) and (2) internal (I – levels of directing and controlling). Modern management also controls the processes in which: (i) marketing (MA), (ii) resources (RE), (iii) operations (OP) and (iv) finance (FI) (as organizational [operations] functions) take part, the results of which can lead to future prospects of an organization. Since the design and improvement of a system can be considered to be modern methodologies of changing the system, the design and improvement of modern systems are performed on the external part, while the design is performed because of more significant and complete (general) environmental impact, and the improvement is mainly done due to lower or increased influence ("requirements") of working environment, thus, internal part of management. (Tauzović, 2012a).

Modern innovative methodology, which is obtained through research and verified through business operations (i.e. organizations) management (Tauzović, 1998), can essentially be used to solve all the (operational) problems of a business organization through a cyclical, iterative, continuous and spiral processes consisting of: 1 Preparations activities (1.P – 1.1. External [Ep – Needs activities] and 1.2. Internal [Ip – Policy activities]), 2. Analysis activities (2.A – Support activities), 3. Synthesis activities (3.S – Supply activities) and 4. Control activities (4.C – [Review and] Improvement activities) and it is known as Tauzović's General Concept (TGC – or in the appli-

cation of management Tauzović's General Continuum [TGC]) of organizational (operations) system research and management.

Systems (comprehensive) management concepts which can be established, verified, developed and confirmed in business, as well as in other operations, systems called Tauzović's General Concepts (TGC) for solving problems of operating (organizational) systems, are a good basis for further, more modern developments of practical-theoretical management of all the areas of (global) economy. Because of this, there is a scientific and professional duty for so thoroughly confirmed concepts to be published for the first time (or displayed to the public) in such an eminent international journal Strategic Management, Faculty of Economics in Subotica. A particular reason for the publication of the content in that magazine, among other things, is that it published the starting point of modern Systems Management Concepts (SMC) named Modern Management (Tauzović, 2012a), which are analyzed, expanded, systematized and presented in acceptable forms in this paper.

1. Total quality management (TQM)

Modern application of TQM, as an integrated approach to systems management, has traditional management as its basis, through which it is possible to collect various types of (real) data transformed into information and use different levels of its support. The essential differences in the application of TQM are based on foundations from which comprehensive management starts and develops, not only of quality, but also of the overall system and its environment. Lately, especially when considering business management or business organizations (systems) management, the following elements are used, which can be contemporary displayed as: 1) Consumer Orientation (External and Internal Preparations – 1.P), External Planning and Leadership (Analysis – 2.A), Continuous Improvement and (Continuous) Education (Synthesis – 3.S) and Authorization of (Business) Employees and Teamwork (Control – 4.C). However, the comprehensive (modern) approach to the application of TQM, from the standpoint of its contemporary (systems) comprehensive management, can be used as:

1. modern Systems Management Theory (SMT), and
2. modern Systems Management Concepts (SMC) (Tauzović, 2002).

1. TQM as a modern SMT provides processes and capabilities that are absent, but nevertheless essential to management. Achieving a well developed system of operations (as the fundamental and main component of a business) is very important for each management, but the necessary skills for providing the quality of the process and product are usually either missing from these systems, or new, innovative approaches (or attitudes) for achieving the level of those skills are needed. In this case, the role of TQM is significantly greater, because the essence refers to the need to achieve the desired proficiency of an individual and system in an organization in the areas where the usefulness of TQM is particularly emphasized. TGC can also be used for these purposes.

2. TQM as modern SMC, i.e. as an excellent harmony and revitalization of the production (of products) process management, results in customers' satisfaction, gaining profits, market acceptance of the organization's competitiveness or service delivery in a specific area of (business activity of) market. In this case, individuals, teams or comprehensive organization management usually operate effectively and efficiently and the philosophy of TQM, as its application, becomes very acceptable and necessary for achieving the competitiveness of an organization. Although this application of TQM is environmental, its successful implementation can mainly be done internally, by using the TGC as management application of Tauzović's General Concept and with "certain" (necessary) environmental help. The appropriate use of customers' and managers' (employees') behaviour, as well as organizational culture results in the necessary and meaningful support to overall organization management.

2. Tauzović's general concept (TGC)

Modern systems approach and analysis of the results obtained through the comprehensive research carried out within the research project "Modern Management of Operations Systems" (Tauzović, 1998), as it has already been indicated in the introductory consolidations, may lead to systems synthesis that components (or functions) of operations (organizational) systems may be globally – theoretically and practically – shown and studied in terms of certain areas of activities (processes), namely: 1.P – (Overall) Preparations activities (1.1.Ep – External and 1.2.Ip – Internal), 2.A – Analysis activities, 3.S – Synthesis activities and 4.C – Control activities. A further analysis and detailed research of such relations have lead to

conclusion that this kind of relations may be used for theoretical and practical needs of management through:

{ → 1.P – Preparations activities (1.1.Ep – [Overall] Needs activities or **purpose** [or requirements] for the system existence /→ ←1.2.Ip – (System) Policies activities (strategies or **objectives)** → →2.A – (System) Support activities (or **inputs**) → 3.S – (System) Supply activities (or **transformation of inputs into outputs)** → 4.C – (System Control and) Improvement activities (assessment or outputs) →} (Figures 1 and 2).

This innovative (modern-systems) methodology, called Tauzović's General Concept (TGC – referred to in application Tauzović's General Continuum [TGC]), can be used to resolve system and comprehensive management problems, through subsequent use of the continuum of four sets: (i) cyclical, (ii) iterative, (iii) continuous and (iv) spiral activities in TGC, based on modern model of operations systems management consisting of, apart from working (internal) and general (external) environment (as well as conceptual participation in preparations), the other four levels: [1] institutional (planning), [2] strategic (organizing), [3] operational (directing) and [4] control (controlling) (Tauzović, 1998). Such a management methodology can be divided into two parts:

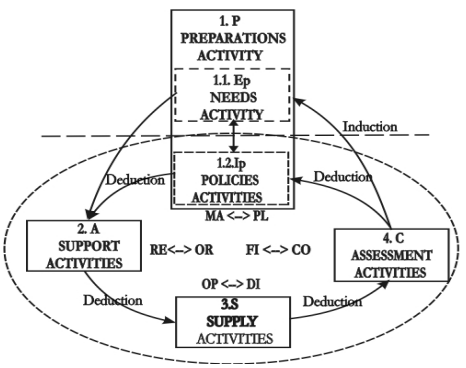

Figure 1 Theoretical Tauzović's General Concept (TGCt)
Source: Author, 2012a

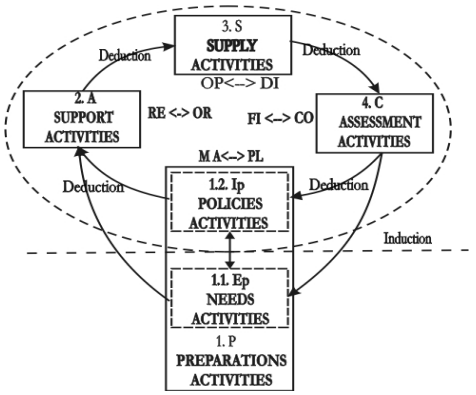

Figure 2 Practical Tauzović's General Concept (TGCt)
Source: Author, 2012a

i. bidirectional inductive part – in the bidirectional basis, it consists of 1.P – Preparations Activities (1.1.Ep – Needs activities [requirements] or purpose, and 1.2.Ip → – Policies activities [strategies or objectives]) (→1.P/→1.1.Ep← →1.2.Ip→/→), and double unidirection: (i) 1.1.Ep – Needs activities (requirements or purpose) and 2.A – Support activities (or inputs) (→ 1.1.Ep → 2.A →) and (ii) 4.C – (Control [Review] and) Improvement activities (assessment or outputs) and 1.1.Ep – needs activities (requirements or purpose) (→ 4.C → 1.1.Ep →), and
ii. Unidirectional deductive part – consisting of 1.2.Ip – Policies activities (strategies or objective) 2.A – Support activities (or input), 3.S – Supply activities (or transformation of input into outputs) and 4.C – (Control and) Improvement activities (assessment or outputs) (← 1.2.Ip → 2.A → 3.S → 4.C →) (Figures 1 and 2).

Through the application of the TGC, as a modern (innovative) management methodology, it is possible to display it conditionally as a modern (i) theoretical, social and organizational or external use, mainly focused on "soft" systems (social and organizational – **TGCt**) (Figure 1) and (ii) practical, modern natural and technical or internal use, which is primarily related to the modern (supplied with organizational [operations] functions), traditionally referred to as "hard" systems (known as the natural and technical – **TGCp**) (Figure 2). Various presentations (forms) of the TGC (**TGCt** and **TGCp**) are directed to a more acceptable understanding and monitoring of its use in general management (research and management [in a narrow sense]) of various types of

modern systems. TGCp can be used for systems research, while TGCt is used for systems or system parts management (in a narrow sense), as well as their levels. Such forms of (general) systems management offers a good foundation for further initiation and general development of not only future management methodologies, but also operating (business) organizational performance.

When it comes to comprehensive management, the TGC application may be considered, apart from the overall, in some specific contexts. Besides (general) external (as theoretical) and (specific) internal (as practical) application, it is applicable, to each part or management level separately, and it is even applicable to certain parts (activities) of each management level. In all cases of TGC application, the prior procedure refers to why and what should be done (as basic induction), and the subsequent ones are how much (the quantity), when (the time) and where (the place), how and for whom (for market participants – customers and managers) it should be done (as deductive part), which again becomes why and what should be done, etc. (Figure 3).

The essence of TQM implementation is based on a suitable balancing of organizational realities (i.e. reality) and human resources (their available knowledge) development to achieve quality objectives. Organizational principles are found in the technical aspects of TQM, while the human principles are essentially found on the communication side of TQM. During the application of TQM, the necessary skills must be understood and balanced, so that they can be connected in a satisfactory way, and thus get possible and desired results from such applications. As with any good management system, such as TQM, environmental customers must be regular buyers (consumers) and good backing for the organization, thus the backing for good "competitiveness", while managers (employees), as "internal" customers, need to be loyal and certain producers of "productivity" (progressively "profitability"). In this way, the modern application of TQM satisfies cyclical, iterative, continuous and spiral "management practices", which can be displayed through Tauzović's General Concept (TGC) of the results of quality business organizations management (Figure 4).

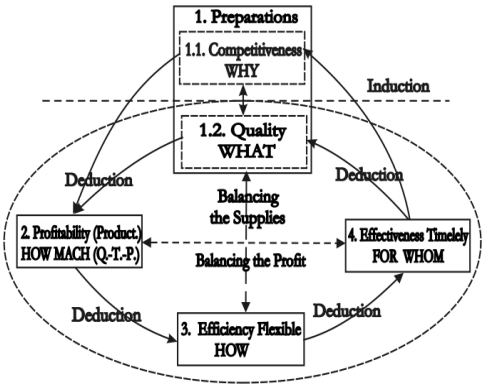

Figure 3 Tauzović's General Concept (TGC) of supply and profit balance
Source: Author, 2012c

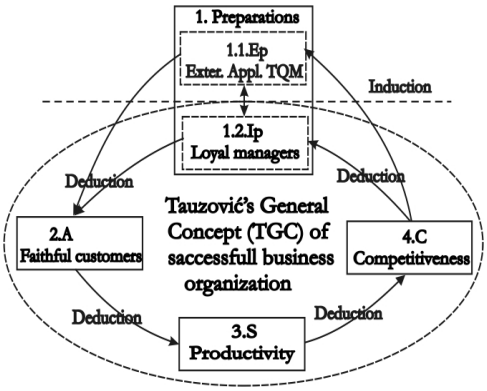

Figure 4 Tauzović's General Concept (TGC) of successful business organization
Source: Author

When it comes even to modern (research and) management, together with the development of operations systems, the "considerations" are usually based on the achievement of a definite (general [i.e. external, projected] and individual or specific [i.e. internal, production]) quality of future products of the system, which would be the basis for the system to enable (general and individual [working]) competitiveness in its environment. Since principles of modern TQM are used for these purposes, it has to be based on reliable determination of the real (practical) data. A detailed systems analysis of research led to the conclusion that the level of: (i) controlling must use **real (practical) data**, (ii) directing the **information** (obtained from real data too), (iii) organizing **knowledg**e (extended by information of the real data) and (iv) planning **theory** (supplemented by the knowledge determined on the organizing level) (Tauzović, 1998), while **concepts** (as distinct ideas and views based on relevant theory and practice [experience]) are used for managing (or

compliance with) the environment (especially working environment).

Having that in mind, in the research of system, after a certain preparation in the "environmental levels" (general and working environment) and "preliminary" planning (as preparations), one starts from controlling, then directing and organizing, and finally to the level of planning (as analysis), where, by including environmental influences (working and general), decisions on purpose of "existence" of the organization (system) which is a basis for determining the objective of the system are made (or established). Besides the determined system objective, decision making and implementation (thus management [in the narrow sense]) are performed from the level of planning, then organizing, directing and controlling (as synthesis), and the final "verification" is performed at the level of planning (as an assessment), which represent the primary (and major) application of TGC. This sequence of comprehensive management, thus research and management (in the narrow sense), has determined the specific ways of applying Tauzović's General Concept (TGC). It also points out that its practical form should be used – TGCp, for the research areas and its theoretical, TGCt form – for management. Further research into the TGC application led to the conclusion that the theoretical form is suitable for external, and practical for internal [both parts or levels in the parts]) management (Tauzović, 2009). Analogously, special forms (of application) of TGC can be used for design (as an external management) – a theoretical form, and for the system improvement (as the internal management requirements) – a practical form. Consequently, the comprehensive management consists of research and management (in the narrow sense). The research of a system, (mostly) based on the needs of the goal (target) market and "preliminary" planning, starts from the lowest level – controlling (control), then it continues at the level of directing (operational) and organizing (strategic) level and it ends at the planning (institutional [top]) level, whereby four practical TGCp in a way that the synthesis of the previous TGCp represents the external preparation of the next TGCp are used. For management (in the narrow sense), using TGCt, decision-making (including determining the objective of the system) is performed at the level of planning (institutional – using theory), continues on the organizing (strategic – using knowledge), directing (operational – using information) and controlling (control – using data) level, from where it is controlled whether or not the system has implemented the decisions (achieved the objective). When managing [in the narrow sense], four theoretical TGCt are used in sequence, analogously connecting all TGCp as in research.

3. Business Systems (Organization) Management

This chapter summarizes the results of (systems) analysis and synthesis of the managing organization (operations) systems based on their parts – external (E) and internal (I) shown in **Modern Management** (Tauzović, 2012a, p. 61- 76). Using the abbreviations:

i. one-letter – the TGC activities (preparations [P], analysis [A], synthesis [S], controls [C]) and management parts (external [E], Internal [I]),
ii. two-letter – the management levels or management functions (planning [PL], organizing [OR], directing [DI], controlling [CO]), and combinations of TGC activities (as the first letter) and management parts (as the second letter), so that for PE is used for external management preparations, PI for internal management preparations, SE for external management synthesis, AI for internal management analysis, CI for internal management control, etc.,
iii. three-letter, in addition to TQM, TGC, SMT and SMC, – the combinations of TGC activities (P, A, S, C) and management level (PL, OR, DI, CO), as well as the external and internal parts of TGC preparation and management parts, so that PPL is used for planning preparations, AOR for organizing analysis, SDI for directing synthesis, etc; as well as PEE for external preparations of external management (or external [progressively known as strategic] marketing – MAE), PEI for internal preparations of external management, PIE for external preparations of internal management and PII for internal preparations of internal management (or internal [progressively known as operational] marketing – MAI) (Figures 5 and 6),

it was shown that the systems management can be considered as making advanced management modernized using TGCt and TGCp. Under such management, TGCt (used for the external man-

agement part) and TGCp (used for the internal management part) are connected through their syntheses 3.SE ←→3.SI (Figure 5). Based on this, (modern) systems management, shown in Figure 5, can be divided into:

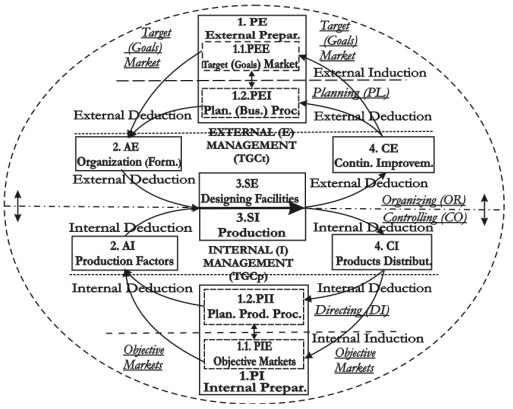

Figure 5 Model of managing systems based on parts.
Source: Author, 2012a

1. External management part (E – as [planning and design] production facilities or operations systems), based on the theoretical TGCt which includes: (i) the planning level (with activities) 1.PE – external preparations, as follows: 1.1.PEE – Target (goals) market (for creating the conditions for an individual or group participation [including suppliers, co-operators and competitors], and thus determining the objective markets [for the needs of internal management part]) and 1.2.PEI – Planning (business) processes (the use of modern procedures and making significant innovations in the preparations [structures and ways of performing business for objective markets]), and (ii) the organizing level (activities) 2.AE – Organization (Business Formation of Union [alliance] or determining whether to participate in the overall market in the union [group, association] with other organizations [including supplying, cooperative and competitive] or independently), 3.SE – Designing (production) facilities, thus the operational system, (which provides the organization [or union] with critical competitive advantages, share increase in [selected] objective markets, better negotiations with suppliers, co-operators and competitors, as well as the ability to prevent [not included] competitors to participate in their parts of goals [target] markets), 4.CE – Continuous improvement ([i.e. promotion of] quality, productivity, customer service and competitiveness) (Tauzović, 2009). This part of management (thus, design [and production] of facilities or operations [or operations systems]), determines the objective markets for the purposes of internal management.

2. Internal management part (I – as production [and distribution of individual] products), based on practical TGCp, which consists of: (i) the directing level (with activities) 1.PI – Internal management preparations, namely: 1.1. PIE – Objective markets (determining appropriate objective markets for the production of products [goods, information, management, services], gaining income from advertising and sharing documents accompanying the products) and 1.2.PII – Planning production process (production facilities) (exchange of agreements [messages] between business and production subjects), and (ii) the level of controlling with the activities 2.AI – Production factors (purchase) (contracting and payment options), 3.SI – Production (creating products), 4.CI –Products distribution (product delivery to the final costumer with [end] receiving the revenue for produced products) (Tauzović, 2009).

This kind of systems management: (i) on the external part, starting from the target (goals) market, the system is designed (as operations system), and thereby the objective markets are determined, and (ii) on the internal part, starting from the objective markets, the terms for needs of products production, thus, production system, are determined (for individual markets).

While by the external management, based on a survey of target (goals) market of business activity, the system (planning and organizing [design] operations) for internal management purposes is designed, and thus the objective markets of business activities are determined, the internal management (directing and controlling of [production] operations) is therefore used for examining whether it is possible to produce a specific product in a satisfactory manner for both the customer (consumer – on the business activity market) and the manager (employee [producer] – [priority] in the system). If this is possible the product can also be produced, otherwise one moves to the external management from 3.SI – Production (product creation [as internal supply]) to 3.SE – Designing facilities (as external supply) and the possibilities of producing products are subsequently explored (Figure 5).

Hence, (modern) management is carried out, by using Tauzović's General Concept (TGC), whose activities are P, A, S, C, through external (E) and internal (I) management (Figure 5). External management is used for the design of op-

erations (organizational) system, while the internal management uses operations as a production system (of an organization). {→PE→AE→SE →CE→} is used for the external management, while {→PI→AI→SI→CI→} is used for the internal management. Although these two parts of management may be seen separately, system management is performed using the following process:

{→PE→AE→SE(→CE→PE→AE→SE)← →SI→CI→PI(→AI→SI→CI→PI)→},

where the activities shown in parentheses indicate the possibility to control internal and external management parts (Tauzović, 2012b).

Symbolically viewing, the merging external management supply (3.SE) with internal management supply (3.SI) the possibilities of operations and production system are brought into direct connection, as being a unique entity (system), which in the first case can be viewed as static (of defined [designed] structure) and in the second case as dynamic (using the processes through the structure) entity (system).

On the basis of more detailed (systems) analyses of individual management parts it is possible to determine their (systems) syntheses as a basis for making decisions about the existence (and the objective) of the system (organization) and subsystems (production system). Determining the synthesis, the objective markets are determined as well, where the products (goods, information, management, and services) produced in the production system will be distributed. As the synthesis of management determines the (overall) system, it should be done through the (compromise) optimization, first, for the external part – as the optimization of the system (organization), and based on the optimization, or in accordance with it, determined (a compromise) suboptimisation of the internal part – as the optimisation of subsystems (production system) (Figure 6). To sum up, the optimization of the production system (made in the internal part) is determined based on obtained optimization of the organization (made in the external part).

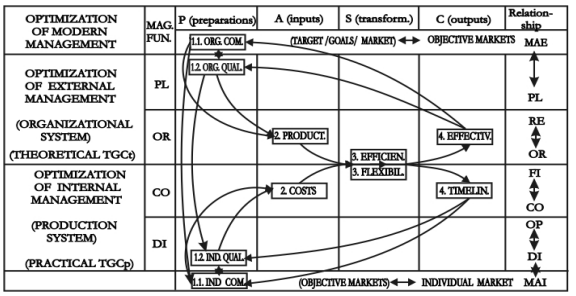

Figure 6 Optimization of the organization (system) and its production system (subsystem)
Source: Author, 2012a

Although advance management could have accepted the possibility for both optimizations to use the same evaluation measures, in modern (comprehensive) management it is possible to use different mutually harmonised (analogue) evaluation measures, namely: (i) the following measures may be used { → 1.1. Organizational competitiveness [as general] ← → 1.2. Organizational quality [as general] → 2. Productivity (directed to profitability) → 3.Efficiency → 4. Effectiveness for optimization of organization (system), i.e. its external part (Tauzović, 2006), and (ii) the following evaluation measures (→ 1.1. Individual competitiveness [of product – as specific] ← → 1.2. Individual quality [of product – as specific]) → 2. Costs (of product production) → 3. Flexibility (production of product) → 4. Timeliness (product distribution [delivery] at particular market) may be used for optimization of an individual product (produced in a production, its internal part, system [subsystem] (Tauzović, 2009). As the basis of the organizational optimization (as system), quality (intelligent) simulation may be used (with which [relatively] much information may be obtained by using a few data), and the quantity (technical) simulation is usually used for determining the optimization of a production system (that is, the mean value of production of all products – as subsystems) (which provides [relatively] few information based on a large number of data).

4. Systems management concepts (SMC)

Development of certain parts of the global economy has not evaded business organizations, as their most international part. The establishment of General Systems Theory (as a scientific discipline) has provided the possibility to determine systems theories in some practical areas as well. It made possible the establishment of the Systems Management Theory (Tauzović, 2000), which is

being studied in the present and develops system entities management in relation to their environment as well. Modern management systems do not only manage the systems entities, but they also manage the systems entities and their direct (internal), and even indirect (external), environments. Systems Management Theory (SMT) is required not only for this kind of management, but also its extension (or upgrade) called System Management Concepts (SMC). However, these SMT extensions, required some special guidelines in the initial period for their further development. If such guidance related to business systems (organizations), these concepts were named Systems Concepts of Business Management. Thus, it was about "business" management, which had not only business systems managements as its basis, but also business systems management (business organizations, including operations systems, production systems and working units [as the basic organizational unit]) and their (business) environments. Since modern business systems belong to the most complex systems in the global economy, SMC of all other modern (organizational) systems can be established and developed on the basis of the results obtained from their research (Tauzović, 2013).

4.1. Basic Systems Concepts

In the article Modern Management (Tauzović, 2012a) the basic systems concepts were determined, mainly, through TGC, the most significant of which are listed below in Table 1 (Tauzović, 2013).

Table 1 Linkages between the TGC activities and basic systems, conceptual and consumer concepts, concepts of organizational function, management functions and (both internal and external) management

TGC Concepts	→1.(1.1.Exter. Prep.← →1.2.Inter. Prep.)→2.Analysis→3.Synthesis→4.Control→
1.Systems	→1.(1.1.Purpose (Goal)← →1.2.Objective)→2.Inputs→3.Transformat.→4.Outputs→
2.Conceptual of 2.1. Management 2.2. Research	→1.(1.1.Concepts← →1.2.Theory)→2.Knowledge →3.Information →4.Data→ →1.(1.1.Concepts← →1.2.Data)→2.Information →3.Knowledge →4.Theory→
3.Organiz. funct.	→1.(1.1.Prosperity←→1.2.Marketing)→2.Resources→3.Operations→4.Finance→
4.Manag. funct.	→1.(1.1.Competitiv.←→1.2.Planning)→2.Organizing→3.Directing→4.Controlling→
5.Managerial 5a. Ext.. Man. 5b. Int.. Man.	→1.(1.1.Competitiven.←→1.2.Quality)→2.Productiv.→3.Efficient→4.Effective→ →1.(1.1.Gen. Com.←→1.2.Gen. Qual.)→2.Profitabil.→3.Efficient→4.Effective→ →1.(1.1.Indiv. Com.←→1.2.Indiv. Qual.)→2.Costs→3.Flexibility→4.Timeliness→
6.Customers	→1.(1.1.Why←→1.2.What)→2.How much, When, Where→3.How→4.For whom→

Source: Author

4.2. Expanded Systems Concepts

Combination of basic systems concepts can result in obtaining their expanded forms. Therefore, combining:

1) Organizational and management functions concepts may lead to the modern definition of (organizational) systems management. Therefore, modern management of organizational systems can be defined as the process of effective and efficient (based on systems approach) union of organizational (prosperity, marketing, resources, operations and finance) and managerial (competitiveness, planning, organization, directing and controlling) functions. This means that an organization can be prosperously competitive if it effectively and efficiently connects its organizational and managerial functions, i.e. prosperity and competitiveness, marketing and planning, organizes resources, directs operations and controls finances.

2) Managerial and conceptual concepts:

2.1. of management, the needs for (modern) management are obtained:

→(Competetive Concepts ← → Quality Theory) →
→ Productive Knowledge → Efficient Information → Effective Data →.

2.2. of research, the needs for (modern) research are obtained

→(Competitive Concepts ← → Quality Data) →
→ Productive Information → Efficient Knowledge → Effective Theory →.

3) Concepts of external and internal management, leads to the following:

→(General and Individual Competitiveness ← → General and Individual Quality) →
→ Profitable Costs → Efficient Flexibility → Effective Timeliness →.

4) Consumer concepts and concepts of internal management, it is proved that the following links exist:

→(Why – Competitiveness← →What – Quality)→How much, When, Where – Costs→
→How – Flexibility→For whom (for consumers and managers [employees]) – Timeliness → etc. (Tauzović, 2013).

4.3. Complex systems concepts

Although it is possible to specify more complex systems management concepts in different ways, here this will be done using (implementing) the

conceptual Tauzović's General Concept (TGCc) (Tauzović, 2009). For the direct comparison of internal and external organizations (systems) management, appropriate TGCp actions of internal management (Figure 5) can be "raised" (moved) for two "levels" according to TGCt of external management, so that the activities of the organization and control (as the "initial" [inputs] and "final" [outputs] activities of transformation [synthesis] individual management parts) can be directly compared (Figure 7).

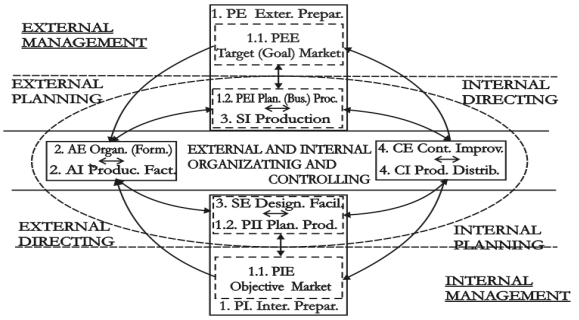

Figure 7 Conceptual Tauzović's General Concept (continuum) (TGCc) of organization.
Source: Author, 2009

Figure 7 provides detailed separate relations between the activities of external (E) and internal (I) management. Here are the comparisons of particular importance and for further direction of individual synthesis with internal preparations, namely:

(1) → 1.1. Target (goal) market of external management (PEE)←

→1.2. Planning (Bus.) process for needs of (goal) activities markets of internal management (PEI)←

→3. Production as internal management synthesis (SI),

which represents the basis for business system (organization) design (redesign), and

(2) → 1.1. Objective markets activities of internal management (PIE) ←

→ 1.2. Planning production (PEI) →

→ 3. Designing facilities (SE - as external management synthesis),

as the basis for business system (organization) improvement (Figure 7).

4.4. Upgraded systems concepts

Procedures for determining complex SMC (Figure 7), based on model systems organisation management by using their parts (Figure 5), possible directions for their further comprehensive research have been determined as well, which is particularly related to the upgraded (internal and external) systems management concepts (or adjustment) of system environments – general (or external) and working (target [goal] or internal) economic activities markets, in which (business) organization participates with its products (goods, information, management, services). If the TGCp activities of internal organization (system) management again "raise" (transfer) for two "levels" through TGCt activities of its external management (Figure 7), then it is possible to determine its systems concepts of its working (goal) or internal environment called the internal system concepts of the environment management (Figure 8). To determine the external systems concepts of environment management, then it is necessary to "raise" (move) the TGCt activities for four "levels" through TGCp activities of internal systems concepts of environment management (Figure 8), so that the overall system concepts of internal (working [goal]) and external (general [business]) environment management, or an upgraded systems concepts of system management, form two specific parts of external and internal environment management, analogous to the parts of systems organisation management. Therefore, the first, or external, part of upgraded systems concepts is specific TGCt, while the other, or internal, part of upgraded systems concepts is specific TGCp, and they are connected to the appropriate supply activities – external (3.Seec) and internal (3.Siec) environment management (Figure 8).

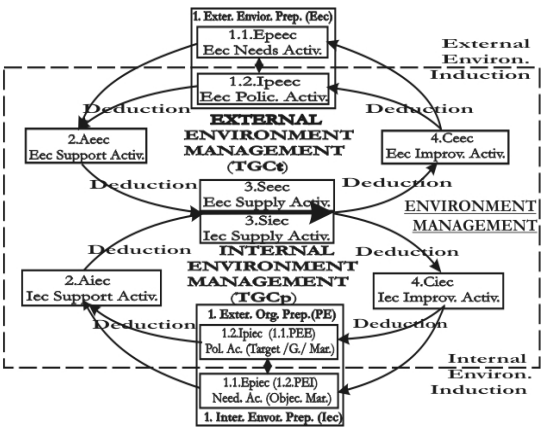

Figure 8 Basis of environment systems concepts (based on the parts)
Source: Author

Based on this, foundation (processes) organization design is based on external (general [busi-

ness]) upgraded systems management concepts, while the base for (the process of) production system based on internal (working [goal]) upgraded systems concepts. Due to the lack of appropriate terminology for a more detailed elaboration of upgraded systems concepts, the names for specific activities of these concepts should be specifically determined, which requires broader participation and agreement of the modern systems participants in management (managers and customers). The basis for such determination (according to Figure 8) is given, in particular:

1. Upgraded systems concepts of the external environment management (Eec [eec]) TGCt {→ 1.Preparations (Eec) (→ 1.1.Epeec [Eec need activities] ←

→ 1.2 Ipeec [Eec policies activities]) → 2.Aeec (Eec support activities)→

→ 3. Seec (Eec supply activities) → 4.Ceec (Eec improvement activities)→}, and

2. Upgraded systems concepts of internal environment management (Iec [iec])

TGCp {→ 1.Preparations (Iec) (→ 1.1. Ipiec [Iec needs activities]←

→ 1.2. Ipiec [Iec policies activities]) → 2.Aiec (Iec support activities) →

→ 3. Siec (Iec supply activities) →4.Ciec (Iec improvement activities)→},

which are analogous to the basic concepts of – external (TGCt) and internal (TGCp) – organization management (Figure 8).

The detailed determination and implementation of upgraded systems concepts makes it possible to determine that not only that the electronic business management (as management of virtual organization) (Tauzović, 2012d) does not differ from the traditional system of information management (Chaffy, 2009), but it is a special kind of metamanagement. Since metamanagement belongs to modern systems management, therefore SMC, particularly upgraded systems concepts, can be a good basis for its further systems research.

Continuing the research of modern systems management concepts can result in numerous, more complex concepts and, further on, to principles. All of them, essentially, may have significance, method and way to achieve the competitiveness of the organization as the basis. Under 1.1.Competitiveness, why customer and manager are involved in economic activities market, it should be identified with what it is done – 1.2.Quality. Quantity (How much, When [Time], Where [Place]) is connected to 2.Profitability, and that becomes evident by 3.Efficiently flexible (Why), and For whom (for both customer and manager) refers to the 4.Effectively timely. Presenting the activities why, what and how Tauzović's General Continuum (TGC) shows supply balance, while the quantity(How mach, When and Where) and for whom represents a profit balance (as the difference between total revenues and total costs) (Figure 3). The same logic can be applied to the external and internal management.

In this way, the supply balance, that is: 1.1. Competitiveness (why), 1.2 Quality (what) and 3. Efficiently flexible (how), determines the possible modern concept of competitiveness. It could be:

Competitiveness of the organization (why) is considered to be the degree to which it can, under free and fair market conditions, provide (produce) high quality products (what) for faithful customers (consumers [buyers]) needs, while maintaining and improving the welfare of its loyal managers (employees [producers]) (how) (according to Tauzović, 1998, p.169).

Having this in mind, it can be considered that systems procedures (processes) of using (real) data led to the establishment of future systems management concepts, which means the basis for future expansion and upgraded of modern management. Since in SMT competitiveness is "determined" by the matrix of performance measures, as its *relative quality measure* of evaluation (Tauzović, 1998), in SMC competitiveness is determined by the *absolute quality measures* of evaluation, i.e. good mutual relations between customers and managers. Thus, SMT should be replaced with its extension, or upgrade, SMC.

Conclusion

From the standpoint of modern systems (comprehensive) management, Modern application of TQM, is studied through: (1) Modern Systems Management Theory (SMT) and (2) Modern Systems Management Concepts (SMC), using modern management methodology – Tauzović's General Continuum (TGC). While SMT is primarily focused on management of system entities, the essence of SMC is used to manage systems and their environments, with the necessary support from the system entities themselves. Since modern management does not only refer to management of the systems wholes, but also to management of systems environments, modern SMC, even though essentially based on modern SMT, are significantly different from it. The primary objective of the first one is to achieve competi-

tiveness, while the primary objective of the other one is to achieve productivity (or, progressively, profitability) of all organizations, especially business ones. Even though competitiveness and productivity (profitability) are cause-and-effect connected, comprehensive research into their approaches, contents, results and applications have to start from different demands.

For productivity (profitability), they start from the demands of the whole (system), while competitiveness is based on the demands of environment hence narrow (working [target] – internal) and wider (general [business] – external) market the organization participates in. A successful cause-and-effect connection can be established between productivity (as a result of using the SMT) and competitiveness (as the result of using SMC) in a business organization, but only if quality productivity (profitability) is skilfully „transformed" into the prosperous competitiveness of the business on the (global) business market.

In modern SMC, why (modern) organizations exists should be the starting question, where the answer should be – so that they can be prosperously competitive (and managers [employees or producers] loyal and customers [buyers] faithful), which means that modern management needs to provide the real things (what – quality [effective and timely]) and in the right way (how – profitably [efficiently and flexibly]). This means that only organizations that are prosperously competitive (why), i.e. timely effective (what) and flexibly efficient (how) can survive and be further developed (i.e. be prosperous) in business activities markets and in [specific] business market as well (Tauzović, 2012c). Therefore, modern management of (business) organizations, by using modern SMC, should simultaneously ensure the customers' (consumers') faithful (satisfaction) and managers' (employees') loyalty, and hence achieve perspective competitiveness. SM

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