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## Evolution of Management Controlling Framework: Literature Review

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### Abstract

**Purpose** – Definition of Management Controlling Framework (MCF) had undergone many changes during a short period of time. Definition change mostly reflected a scope transformation during this system development. The aim of this paper is to investigate evolution of Management Controlling Framework, to compare different approaches and discuss outcomes, to propose future development directions based on historical background. It presents a historical revision of different trends of management controlling systems in organisations, according to four indicators: scope, outcome, tools and contradictions. Johnson and Kaplan (1987) suggestion was taken as the starting point of current investigation, as it significantly affected viewpoint change and further behaviour .

**Design/methodology/approach** – A systematic literature review of publications in public sector, management and accounting journals since 1990 was conducted with the aim to answer the research questions: 1. How Management Controlling Framework are described? 2. What are the main characteristics of MCF? 3. How scope of Management Controlling Framework changed over time. 4. What are the main contradictions? Data analysis was performed using Theory of Inventive Problem Solving (TIPS, TRIZ), and a special part of this theory — ‘Laws of (technical) systems evolution’ (LTSE).

**Findings** – Overall, the results confirm that Management Controlling Framework (MCF) can be described and trended through Laws of (technical) systems evolution. These findings provide the following insights for future research such as solve contradictions: 1. Overview, but not overload (detailization problem). 2. Subsidiary independent, but over control (HQ involvement problem) 3. Managing Innovation versus Managing Operations (development problem). 4. Differentiation and unification (culture problem). 5. Leadership versus review (GM problem). 6. Common understanding on the control way and results quantification (Measurement identity problem).

**Research limitations/implications** – Generalisation of research results is limited by three main controlling frameworks and Agency theory as additional lever. Only one aggregation methodology was taken as tool - Theory of Inventive Problem Solving.

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## 1. Introduction

The article is aimed at reviewing the background literature on Management Controlling Framework's scope for international corporations. First of all, it will analyse the concept of Controlling and need for control in organisations. Next, it will conduct a historical revision of the different trends in the literature on control systems in organizations in accordance with their common characteristics. As it will be seen, the Management Controlling Framework has evolved with time and with the transformation of the environment and the circumstances in which companies have operated. A wide-ranging search was undertaken, including electronic databases and search engines such as ERIC, Google Scholar, and a range of websites including research associations and government sites, as well as a trawl of printed and electronic journals. Scientific literature review allows better understand the research problem in terms of historical background, theoretical framework, and current research developments and trends. Used literature sources allow to make a conclusion that Controlling Theory is as part of Management System concept, and is well described. From another point of view, practical implementation of the controlling in various companies encounters a number of problems.

The word 'Controlling' has numerous meanings and different connotations. Small business growing into International Corporation was one of the reasons. Large investments are being made in Management Controlling. However, there is a risk that investments do not lead to the expected benefits. Practical Controlling usage demonstrates different understanding of definition and scope. Controlling was defined as a system to coordinate management and control efficient. American approach, pursued by US Professor Anthony was focused on financial aspects, as one can see from the following expression: „Management control is the process by which managers assure that resources are obtained and used effectively and efficiently in the accomplishment of the organisation's objectives.” (Anthony, 1965) This was a typical accounting approach, focused on the use of financial and accounting information systems, fundamentally through cost accounting and budgets. German viewpoint was enriched with different contributions which centered on costs. More recently, Kloot and Latter (1997) also points out that in process terms, management control exists in order to ensure that organisations achieve their objectives, and for Fisher (1995) control is used for creating the conditions that motivate an organisation to obtain predetermined results.

Taking all this into consideration, this article sets out to offer an overall, though synthesised, vision of different theories and approaches which have been developed on Management Controlling Framework. The global financial crisis had accelerated and gave a new impulse for controlling development. Toffler (1980) and Ansoff (1989) have noted that business environments are becoming more turbulence, driven by events that are rapid and difficult to understand, originating from different sources and becoming unpredictable. International business development requests for scope of controlling change according to current business requirement. Previous approaches unable to satisfy the requirements, such as high speed of control, wide overview, low cost, puffed quality of information. The Understand-Simplify-Automate (USA) principle is a common sense approach. It is so general that it is applicable to nearly any process (Groover, 2007).

## 2. Research Methodology

A literature review serves several purposes including establishing the needs of the research; defining the scope of research and preventing the researcher from conducting research that already exist. This allows the researcher to find out what has been done in terms of the problem being investigated to ensure

that duplication does not occur. In our case, from the list of specific reasons for performing a literature review given by Bless (2000 p.20) the following reasons need to be mentioned:

- To sharpen and deepen the theoretical framework of the research;
- To familiarise the researcher with the latest developments in the area of research;
- To identify gaps in knowledge, as well as weaknesses in previous studies;
- To discover connections, contradictions or other relations between different research results by comparing various investigations;
- To identify variables that must be considered in the research.

Control framework an implementation issue has determined the methodological approach and the article structure. This paper focuses on Management Controlling Framework evolution. It provides an overview of four main Controlling Management Frameworks in chronological order: First revolution (by Johnson and Kaplan), Simon's lever of Control, Otley's Performance Management Framework, Ponsard and Saulpic extension of Simon's framework. When we have to make an improvement or to find new ways to solve new problems regarding a product, process or even an organization, no matter in which domain we are developing our activities, we use a conceptual design process (Banciu, Draghici, Grozav, 2010). By Pahl and Beitz (2007); the development process comprises four phases. These are: planning and clarifying the task (specification of information in a requirements list); conceptual design phase (specification of principle) that has as objective to determine the principal solution; the embodiment design phase (specification of layout) where a working principle is elaborated in the form of preliminary layouts that are then evaluated and rejected and/or combined to produce a definitive layout; detail design phase (specification of designed object) and it is the phase where all design documents are produced. The current investigation was limited by the use of 1st and 2nd phase only.

However, Bless and Higson-Smith (2000 p.20) caution, that although a literature review is essential, it also carries within itself certain dangers. For example, one may be influenced by the results of previous research, or he/she may accept without criticism their chosen characteristics and explanations; one may fail to discover new possibilities; human observations are often biased. Qualitative analysis was performed using Theory of Inventive Problem Solving (TRIZ) and a special method (as part of this methodology) called "Laws of (technical) systems evolution". TRIZ is a problem solving methodology based on logic, data and research, not intuition. It draws on prior knowledge and ingenuity of many thousands of engineers to accelerate the project team's ability to solve problems creatively.

The aim of this study is to evaluate and validate the scope of Management Controlling Model for international companies on the basis of literature review in a historical context. The main questions that have been addressed in this article are as follows:

1. What are the differences in Controlling Framework scopes?
2. What are the main outcomes of the existing Controlling Frameworks?
3. What tools are necessary?
4. What are the main contradictions?

The limitations of the research are connected with the Framework Concepts for multinational corporations (MNCs). For this reason, each framework description ended with a critical part using TRIZ tool. For the same purpose qualitative analysis was also used, as well as literature review, and logical and comparative analysis. The results of comparative analysis of different researchers' points of view on the nature of Controlling Framework are summarized and presented in the Table 1.

### 3. TRIZ approach and tools

Problem solving is at the heart of improvement. Well-known techniques such as brainstorming can help to cope with this sort of situation. However, this type of approach, which depends on intuition and the knowledge of the members of the team, tends to have unpredictable and unrepeatable results. In contrast, Theory of Inventive Problem Solving (TRIZ) uses systematic approach and creatively thinning methodology (Altshuller, 1999). Originally, this approach was developed on the basis of technical systems, but later it was proved to be applicable for non-technical system such as art, education, business (Rubin, 2002). An important contribution, and the basic tenet, of TRIZ is understanding that any system can be viewed as a collection of desirable features (called useful functions) and undesirable features (called harmful functions). The useful/harmful way of modeling systems differs from other kinds of systems analysis used in science and engineering, but it is particularly successful in helping identify areas of a system that need to be and can be improved (Fulbright, 2011).

An essential TRIZ tool that is of fundamental importance to all problem solving approaches is the so-called 'IDEALITY Equation', which is the starting and end point of problem solving. IDEALITY is regarded as the Golden Rule of TRIZ (Gadd 2011; improving IDEALITY is the aim of problem solving for achieving more benefits, less costs, less harms. In TRIZ, there are several trends called 'Laws of (technical) systems evolution'. The 8 Trends Map Natural Progression and Development (Gadd 2011, p.253) are presented below:

1. Increase IDEALITY – become better and cheaper, achieve more benefits/functionality, while costs (inputs – everything we must pay for) and harms (outputs we don't want) decrease.

$$\text{IDEALITY} = \text{Benefits} / (\text{Cost} + \text{Harm})$$

2. Follow S-curves – after being invented new systems improve slowly at first while being developed.

3. Need less human involvement — more automation and self-systems.

4. Have non-uniform development of parts — some parts of the system develop faster than others.

5. Simplicity – complexity — simplicity.

6. Increasing dynamism, flexibility and controllability.

7. Increasing segmentation and use of fields (also called Transition to Micro-levels and Increased Use of Fields).

8. Matching and mismatching of parts – matching function and functionality to all requirements not just the prime output to produce a system which finally delivers everything we want instead of just some of our requirements.

In this article, the authors describe only three steps of this cycle – Scoping, Analysis and Problem definition on the basis of literature review. In the following chapters, the authors try to develop a methodological framework in chronological order using the TRIZ approach.

### 4. First revolution

Control system for decision making as a new knowledge was developed by Johnson and Kaplan (1987). Management Control is often mentioned as 'young' in comparison with other management disciplines, even though "historians have demonstrated that accounting reports have been prepared for thousands of years". According to Kaplan (1991), the management control system makes it possible to

adapt to changes in the environment, provides feedback in the performances, makes it possible to evaluate the profit of the products and clients, and helps make capital investment decisions.

Earlier, the main actors of the control system were gatekeepers (like accountants, sales planners, engineers or quality controllers) who focused only on mismatching. They kept linear managers informed about the negative variances, but it was not best way to keep or increase employees' motivation. This was a reasonable approach based on Accounting and Management Accounting. The earliest possible starting date of a strategic management was 1962 (Chandler), when Chandler published his pioneering work on strategy. But in 1996, Kuhl still considered that this discipline had a low level of paradigm development; the majority of research was chaotic, with high levels of disagreement regarding theory and method. Definitely it had a negative impact on management control systems development. As the result, at approximately same time deep investigation and development of control framework started.

It should be pointed out that was critical point for the new approach and behaviour creation. It was expected, that on the 1st stage system would fulfill core requirement, but with high price and less efficiently. According to TRIZ, costs need to be reduced, benefits need to be improved, some additional benefits need to be founded and added to the existing system; harms need to be reduced as well. As the result, costing techniques were substantially reworked with the introduction of activity-based costing (ABC) (Cooper and Kaplan 1992). Another example is economic value-based measurements (EVA) (Stewart, 1990). The development of the balanced scorecards (BSC) as non-financial indicators by Kaplan and Norton (1992) also played a crucial role in this context.

## **5. Simons' Lever of Control**

The first well-described framework was developed by Simons (1995, 2000). His 'lever of control' framework is based on huge amount of case studies and quantitative surveys in different US and Canadian industries. Simons (1995) designed his 'lever of control' to study of effectiveness of a company's business strategy. The main idea is to give "a complete picture of a wide range of possible controls". Simons provides two extreme benchmarks to classify the use of management control systems: interactive versus diagnostic. The first dimension is the degree of involvement of the top management. In the interactive benchmark, top managers intensely involve themselves in the process, while in the diagnostic benchmark, they remain at a distance. The compensation dimension was introduced by Simons (i.e. formula-based for diagnostic process and contribution-based for interactive process), though this dimension has rarely been explored in practice so far. According to Simons' 'lever of control', the main actors in a diagnostic control system are the gatekeepers (accountants, planners, engineers, and quality controllers), who have to focus the attention of the managers on the mismatching; for interactive use, the main actors are operational managers. Although Simons also stressed an important role of the middle managers, he did not discuss much the patterns of motivation and behaviour that were necessary for middle managers to fulfill these expectations. IDEALITY mostly increased due to accomplishing better outcomes, but not to decreasing of costs and harms.

## **6. Otley's Performance Management Framework**

As Rosanas observes (1994, p. 223) that "Measuring the achievement of the organisation's generic objectives will generally modify the behaviour of the top management. In fact, such modification of people's performance (in this case, by the organisational management) is the measuring system's very *raison d'être*: its objective is to arrange the performance of the organisation's members in accordance with the data on the real situation, which will inform them of the achievements attained. If the objectives

defined during the strategic planning process have not been achieved, the managers, in theory, will modify their performance in order to change the course of things”.

Otley (2003) agreed with the approaches that presupposed the use of non-financial measures of performance for two main purposes — to motivate people and to report a company’s results. He focused his work around five central issues of management control system: (1) key objectives, (2) strategy and plan, (3) level of performance, (4) rewards, (5) feedback and feed-forward loops. Later Ferreira and Otley (2005) developed eight criteria that have been related to the management performance, for example: (6) vision and mission of an organization, (7) key success factors, (8) strategies and plan to achieve success, (9) organization structure, (10) key performance measures, (11) level of performance, (12) performance processes, (13) financial and non-financial indicators of performance. The other four have been developed and related to the environment, context and culture: (14) feedback and feed-forward information flows, (15) type of users, (16) performance management and control system, (17) links between the components of the performance management and control system.

The System was moving along S-curve (2), with ascending speed of changes, as the main spurt was given in the previous stage. The level of complexity significantly increased (5), every single point of control was eliminated on a separated lever. IDEALITY (1) is still growing, but not because of fold or reduce of costs or harms. Several part of system developed up to perfection (4), opposite to some other. At the same time, this information overflow and report became non-readable anymore. At this moment, the system stops serving the purpose (8).

## **7. Ponsard and Saulpic extended Simon’s framework**

Simons’ framework was extended by Ponsard and Saulpic (2005, 2006) in two directions. Firstly, they admit the fact that strategic vision used to select the area for interactive control does have an impact on the tools as such. Secondly, the relationship between the control system and the compensation policy is introduced. It is argued that it makes a difference whether the emphasis is on internal coordination or on a better alignment with financial objectives. These two dimensions refer to a set of questions that can be summarised as follows (Berland N, Ponsard J-P and Saulpic O, 2006):

1. How is the control tools constructed? What is the degree of customisation of the control tools? Are they rather: generic or customized?
2. What is the relationship of the control system with the compensation policy? Is the reward system based on the indicators defined in the control system: objectively or subjectively?

Simons (1995, 2000) often emphasised that the only difference between the diagnostic control and the interactive control is in the use of control system, but not in the tool they rely on. Ponsard & Saulpic suggested that an interactive process would more naturally rely on a customised tool, and a diagnostic process – on a generic tool. Their arguments are based on the review of the actual management tools that have appeared recently (such as Balanced Score Cards, EVA, ABC costing method). The compensation dimension has already been introduced by Simons (i.e. formula-based for diagnostic process and contribution-based for interactive process), though this dimension has rarely been explored in practice.

Another main point of they approach was time-scale decomposition of the decision making process. “Time is discrete and divided into periods. At each period, the firm buys some quantity of input at some input price, and uses it to produce some quantity of output which is available for sale at the next period. One unit of input generates one unit of output. At each period the firm sells some quantity from its inventory at some output price. There are production and inventory costs that are known to the firm.

Prices are uncertain; they do not depend on the behaviour of the firm. They are announced sequentially one period after the other” (Ponsard & Saulpic 2005, p. 245). Time-scale decomposition lead to defining usability and limitations of several already know tools. For example, in 2001, Mattis & Ponsard published their investigation about value-based management only for profit centre measurement.

As mentioned above, the literature on project portfolio management reveals the key role of organisational structure for understanding the interaction between the top manager and the project teams. As a result, we suggest analysing the roles of a management control system in implementation of strategic change through a four-grid dimension: use of control system, management tool, compensation system, and organisational structure. At that moment, the system’s development behaviour changes its direction from quantity to quality. The system has become transparent and visible (5), one cycle has been completed. The system needs less human control, it has become partly self-adjustable and independent (3).

## 8. Management Controlling Frameworks Comparison

The results of a comparison of the scope, outcomes, tools used, and the main contradictions are shown in the Table 1. These four qualitative criteria were taken into account based on the research questions that have been developed in the part ‘Research Methodology’ of this article.

Table 1. Comparative analysis of Management Controlling Frameworks (designed by the authors)

Authors of Framework	Scope	Outcomes	Used Tools	Main Contradiction
Initial approach before Jonson and Kaplan	Accounting data aggregation and comparison	Only finance statistics. Able to see working result, but cause and effect are not predictable.	Not in focus, but only accounting value based	Does not give enough overview of the context for decision making
Simons’ Lever of Controlling	Beliefs, boundary, diagnostic control, interactive control	Mission, vision, finance statistic, advices for decision making style	Not in focus, but accounting value based, BSC and KPI, ROI, undefined area for mission, vision, and decision making style	Interactive control is poorly defined, low level of prediction. More intuitive, than quantities/qualitative.
Otley’s Performance Management Framework	Organization objectives, strategic plan, level of performance, rewards, information flows, organization structure, evaluation of personal, feedback types and ways	Mission, vision, finance statistics, performance connected with rewards, KPI, organization structure, deep monitoring of all activities	Partly in focus, accounting value based, BSC and KPI, EVA	Overflow of information, slow and expensive for big organizations.
Ponsard and Saulpic extended Simon’s framework	Beliefs, boundary, diagnostic control, interactive control, tools, relationship between the control system and the compensation policy, organization structure	Mission, vision, finance statistics, customized tools, performance connected with rewards, advanced planning, KPI	In focus, accounting value based, BSC and KPI, ABC Costing, agency theory approach Customization and adjustment of tools. Self-adjustable tools.	Enough for operational management, but not for innovation and other extended activities

From the Table 1 we can see that the scope of Management Controlling Framework became wider step by step due to taking more factors in consideration. Further analysis shows that another development direction was data aggregation to exclude information overflow effect.

Studying the nature of control framework, it is necessary to note the importance of Agency Theory (AT), which was developed at the beginning of the 20<sup>th</sup> century. It was not widely used, and it has never been connected to Controlling Framework. In big multinational corporations, the issues of controlling became more topical (Trienekens and Beulens, 2001; Chang and Taylor, 1999; Roth and O'Donnell, 1996; Nohria and Goshal, 1994; Gupta and Govindarajan, 1991) and provide a delegation approach of management functions (Eisenhardt, 1989). This is the 1st attempt to build trust between the subsidiary and the headquarter based on Simon's interactive controls and work delegation.

## 9. Conclusions

The authors of the article have investigated the Scope of Management Controlling Framework and have shown that Scope needs to be redefined according to new reality. The following contradictions can be drawn from the present study:

1. Overview, but not overload (detailization problem)
2. Subsidiary independent, but over controlled (HQ involvement problem)
3. Managing Innovation versus Managing Operations (development problem)
4. Differentiation and unification (culture problem)
5. Leadership and review (GM problem)
6. Common understanding on the control way and result digits (Measurement identity problem)

According to the methodology suggested by Fulbright (2011), the next two stages could be "Idea generation" and "Selection". These contradictions need to be solved in the next system generation. As for technical tools, the development of HANA based on SAP and BI can be mentioned. It provides opportunities for collecting as many indicators as possible without time lag between real transactional system of the subsidiary and business intelligent system on the consolidation level. The next step will be to lower delegation on analyst preparation, and to decrease decision making time.

In the authors' opinion, in order to generate new powerful Management Controlling Framework the following issues need to be taken into consideration:

1. The six previously mentioned contradictions;
2. Time limits for decision making;
3. Volume of information flow in international companies;
4. Costs of controlling and its efficiency.

The full description of the new Framework could include:

1. Input source description, data quality, availability as well validation and verification rules.
2. Output data description, quality, availability, validation criteria.
3. Roles in data workflow and responsibilities.
4. Cockpit realisation and system pro-activities.

This article has attempted to provide main directions that could be useful for designing management control system in a multinational corporation. Each control management system needs to agree with sub- and super- systems, it should be transparent and easily scalable. The problem formulation is enough for

'selecting' processes for developing new approaches. Future studies on the current topic are therefore recommended.

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