INTEGRATED FRAMEWORK OF PERFORMANCE MEASURE SYSTEM DEVELOPMENT

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Abstract

Changes in economic conditions shape not only organizations and their business results but goals, process and systems as well. Performance measurement system is no exception. Changes of environment, wide range of stakeholders groups, complexity of organizations structures and processes impact complexity of performance measurement system’s and complicates evaluation of its effectiveness and efficiency. System’s evaluation process is complicated as it should be based on a particular set of criteria, which are based on a wide range of economic and management conceptions. Single dimensional point of view is insufficient to measure them. Paper discloses how performance measurement system could be evaluated using integrated point of view. The aim of paper is to identify significant dimensions of integrated framework of performance measurement system and to describe featured dimensions of their recognition and evaluation. Research is based on analytical/modelling methodology and systemic comparable analysis of theoretical and empirical studies and induction methods.

The main result of this study is suggested integrated framework of performance measurement system. The framework is based using economic cycle, system’s life-cycle and formalization dimensions. Integrated framework also enables to configure measurement of performance measurement system’s effectiveness and efficiency at structure, conformity, development and formalization levels.

Keywords: performance measurement, open system, dimensions of performance measurement, changes, efficiency and effectiveness.

JEL Classification: M41, M10

Introduction

Performance measurement system is conceptualized in academic literature differently. Neely et al. (1995) determined it as a set of metrics used to quantify both the efficiency and effectiveness of actions. Bititci (2000) described as information system which is at the heart of the performance management process and it is of critical importance to the effective and efficient functioning of the performance management system. Simons (2000) pointed out that performance measurement and control systems are the formal, information-based routines and procedures managers use to maintain or alter patterns in organizational activities. In most cases performance measurement is conceptualized as an information system which is effective when it matches informational demand of management. Information system means that it is a set of measures which objectively measure the processes and enable organization to fulfil its mission, goals and directly measurable objectives (Markovic, 2010).

Informational demand is fulfilled when information is incorporated into decision making process.

Evolution of performance measurement systems researches started in the last decade of previous century and were mainly focused on the conceptions and principals those systems were based on. Later the problems of implementation were pointed out. Finally the most popular research questions were focused on effectiveness of performance measurement system and to what level it fits its environment. The questions of systems effectiveness are the most complicated as far as it should be based on a particular set of criteria. Criteria were based on a wide range of economic and management conceptions. Macroeconomic point of view is based on fluctuations of economic cycle. Management conceptions used for research of performance measurement varies from traditional such as contingency, agency, resource based, institutional to modern ones complexity, chaos and etc. Despite the great number of studies the question of effectiveness stays unambiguous. From theoretical point of view the main reason is that different criteria in different studies are based on different theoretical conceptions. At practical level the lack of integrated systemic view leads to uncertainties while choosing, implementing and using different techniques. The reason for introducing this integrated concept is mainly that it takes time to develop effective performance measurement system as well as that an organization needs to build up experience of performance measurement before being able to handle an advanced it. The research questions are as follows:
How to integrate different dimensions and criteria of performance measurement system evaluation? And could holistic framework be investigated in order to recognize, evaluate and develop performance measurement system in particular organization?

The aim of this study is to identify significant dimensions of integrated framework of performance measurement system and to describe featured variables of their recognition and evaluation.

Research is based on analytical/modelling methodology and systemic comparable analysis of theoretical and empirical studies and induction methods.

The main result of this study is integrated framework of performance measurement system recognition, evaluation and development.

Theoretical background

Performance measurement system could be defined as open, functional, continuously improving system subsystems which (1) covers three dimensions of performance evaluation (measurement, analysis / control, planning / decision making); (2) ensures data accumulation and its transformation into information and knowledge in different management levels (strategic and operational) (3) Leads to adaptability of organization in business environment (Gimzauskiene & Valanciene, 2008). Process of performance measurement could be defined as measurement and control. Measurement process is accomplished when (1) facts about external environment and internal performance results are measured with the help of appropriate and adequate type of measures (methods); (2) integrated into more general form of information and (3) disseminated for top managers. Single facts could be analyzed measuring their influence on strategic achievements, which, accordingly, could be integrated into the evaluation of entire strategy. Control process is accomplished when position of expert (manager) is defined benchmarking information about performance results, strategic achievements, evaluated strategy or external factors on the chosen evaluation basis (tasks, goals, strategy and etc.) (Gimzauskiene & Valanciene, 2010).

In that context performance measurement system is an informational system the main function of which is to ensure decisions making process (Neely et al. (1995), Bititci (2000), Simons (2000), Markovic (2010)). The question of systems efficiency and effectiveness could be answered analysing to what level information of performance measurement system covers the wide range of organizational decisions. Starting from financial results and process efficiency and continuing to more complex decisions such as organizations development responding to new technologies, managing its intellectual capital such as relations, brands and human resources. From this point of view performance measurement system ensures decision making process when organizations strategy is translated into set of functional strategic goals multidimensional measures are used for measurement of strategic achievements and of processes as well. The main variables of performance measurement systems are strategy, functional strategic goals, core processes and measures (Hussain & Gunasekaran, 2002, Hussain & Hoque, 2002).

On the other hand performance measurement system is a subsystem of management system, which in turn reflects external business environment. External business environment depends on character of organization’s activities, products and competition. Future more the stage of economic cycle is significant as well. Results of previous researches let us maintain that economic conditions are enabling factor for unique configuration of performance measurement system in each organization (Valanciene & Gimzauskiene, 2008, 2009).

From this point of view the question of performance measurement system’s efficiency and effectiveness should be answered analysing to what level performance measurement system fits its environment and how changes of external environment are reflected in performance measurement system (Gimzauskiene & Kloviene, 2008, 2010). Organization’s reaction to external environment in performance measurement system will be reflected making corrections in strategy and functional strategic goals revisiting core process and changing measures. Growing, explosion and recession are stages of economic cycle that in turn shape the performance measurement system as far as changing business conditions leads to revisions of strategy, goals, processes and measures.

Besides economic cycle organization and its systems has their own cycle. The evolution of performance measurement system also could be analyzed using life-cycle conception. The reason for introducing life cycle concept is mainly that it takes time to develop a perfect performance measurement system as well as that an organization needs to build up experience of performance measurement before being able to handle an advanced performance measurement. This research analyzes performance measurement system characteristics and their development during time. Life-cycle for performance
The changes occurring in the external environment refer mainly to the modifications in the competitive environment, regulation and technology. Those changes influence the manager perceived environmental uncertainty (Milliken, 1987, Tymon et al., 1998). Uncertainties of the external environment are reflected in organizations strategic direction. Following the recourse based view of the organization, to reach market position based upon lowest cost or differentiation, organization must develop specific capabilities. Because organization reaching both types of market position, changes of strategic direction must be reflected in performance measurement system (Henri, 2010). We argue that stage of economic cycle is one of the most important factor which shapes external business environment. Each stage of economic cycle means different nature of business conditions, opportunities and problems as well. From theoretical point of view stage of economic cycle determines the nature of strategy and ways of its implementation. Growing stage determines some kind of growth strategies, explosion (mature) stage demands expansion strategies and in recession organizations are looking for the ways to survive or for new growth opportunities. This means changes in organization and its systems. To what level reaction of organization will be timeless depends on how organization and its systems are able to detect external changes. Future more it is important how long it will take to revisit and configure organizations systems in order to fit new business conditions. Performance
indicators should be re-evaluated to ensure their relevance and appropriateness (Kennerley & Neely, 2002, 2003). Therefore, performance indicators continue to reflect issues of importance to the business, and to contribute to achieve of better alignment among strategies, goals, processes and measures (Henri, 2010). Periodic review may prevent performance indicators from reflecting old priorities and inconsistent measures. On the other hand revision of performance measurement system takes time and could be inefficient from cost/benefit point of view. Henri (2010) argues that it depends in the level of external environment uncertainties the highest level of environment turbulence the more efficient revision of performance measurement system is. Transitions of economic cycle could determine two situations: (1) the extreme points are transition phase from one stage determine the highest level of uncertainties and dynamic environment; and (2) the mature phase of each stage of economic cycle determine lower level of uncertainties and more stable environment.

Transition phase leads to mixed strategy, priorities for shareholder related goals, micro level related processes and traditional set of measures. Mixed strategies in transition phase is an opportunity to test different decisions and to choose the best one. On the other hand organization becomes shareholder orientated. This means that the organization itself is a goal –attaining devise (Georgiuo, 1973). In this sense it possesses its own unitary goal, which is argued by many as the objective of those who created organization; in many cases this is profit maximization for shareholders (Atkinson et al., 1997, Itter &Larker, 1998, Jensen, 2001). Priorities of shareholder become the most important as far as changing environment leads to rational choices in order to adapt and or to survive and not to destroy organizations value and its creation process. Shareholder’s value creation goals lead to rational structure of organization processes at micro level of organizations value chain measured using traditional set of measures, the most important of which are financial (earnings, cash flows and etc.). Mature phase of each stage of economic cycle means clearly defined strategy, stakeholders related goals, micro and macro level related processes and multidimensional set of measures. Mature phase in each stage of economic cycle could be defined as a precondition of more stable external environment. We argue that in order to fit such kind of environment organization becomes stakeholder orientated. In this case traditional organization is contrasted to the one which defines organizations as social system or a collection of individuals or stakeholders each with their own objectives (Simon, 1964, Freeman, 1983). Taking this view organization’s objectives becomes common of consensus goals of all stakeholders. Clearly defined strategy and wider range of stakeholder and their interest realized through processes related with micro and macro value chain levels are more presumable.

Kaplan and Norton (2001) argue that if performance measurement system is stakeholder orientated it could not be strategy orientated as far as stakeholders’ goals in most cases are conflicting. Summarizing it could be maintained that the source of uncertainties and therefore complexity of performance measurement system could be mixed strategy in transition phase of economic cycle and conflicting stakeholder’s goals in mature phase of each stage of economic cycle.

**Dimension of performance measurement system’s lifecycle**

Simons (2000) suggested levels of performance measurement system evolution (start up, growing, mature) are quite clear and could easy reflect changes of performance measurement system through time. Each level is a natural and necessary precursor to the next higher level. Markovic (2010) performed research in chemical industry trying to clarify performance measurement system level using particular model. The dimensions of performance measurement system were: stakeholders, performance measures, causal relations, feedback, hierarchical levels, time horizon, IT support, others. The changes that have occurred during performance measurement developments levels could be summarized within the most significant variables (focus or strategy, goals, processes and measures) which outline content of performance measurement system. During years, these changes have resulted in traditional performance measurement, balanced performance management and now the trend is in line towards complete corporate performance measurement.

Content of performance measurement system depends on selected strategy. The main features of strategy complexity are number of strategic themes which are in deal at the same time in particular organization. Number of strategic themes and their implementation way (objects, place and time position) outlines character of strategy, which could be homogeneous or heterogenic. At start-up level mostly organization has orientation to organizational natural grow or survive. It could be expressed using leadership (cost or product) or differentiation strategy. At this level strategy is clear. The character of it is homogeneous when organization chose cost/product leadership strategy; or heterogenic when organization chose...
differentiation strategy. In the most cases such organization set up simple, rational goals which directly reflect shareholders expectations - profit or company's value. At growing or mature level organization has orientation to grow or activity development, searching of new markets, product or new activities, optimization of performance or effectiveness of management. Such orientation directly depends on external environment: perspective of performance, actions of competitors and economic conditions (growing, explosion recession, etc.). At these levels organizational strategy could be defined as complex of orientation and has heterogenic character. Translated goals take into account the needs of wide range of relevant stakeholders such as shareholders, managers, customers, employees, partners, etc. Organization has complex of goals. Priority of goals is setting according shareholders needs, organizational ability and economic conditions. Simple, strongly defined rational goals are not suitable, also the traditional performance measurement system is insufficient for strategic decisions making.

As the business environment is stable and selected strategy is homogeneous, performance measurement system could be oriented only to shareholders goals, top level management and measurement of internal environment using limited number of measures. At this level strategy matches internal organizational environment. Performance measurement system has one-dimensional character (traditional financial measures), observed processes are formal and simple, directly connected with value chain in organization. As the business environment is volatile and selected strategy has heterogenic character (differentiation, product leadership or complex strategy), performance measurement system should include tactical and strategically levels of management, go through processes related (not only to internal but also to external environment) and be coordinating tool. This means that performance measurement system should observe complicated processes at macro and micro value chain levels, but also should search links between them. Traditional performance measurement system is ineffective in this situation. It has difficulties to achieve such multidimensional level with such complexity of goals, wide range of measures and relationships between them. At this situation organization needs the higher level of performance measurement system which could have expression such as Balanced scorecard system or Corporate performance measurement system.

Summarizing observations we could declare that the performance measurement system at start-up level could be described as limited system, which are reflected the needs of shareholders, used mostly traditional financial measures (has one-dimensional measurement character), covered the top of hierarchy of organization and short time horizon. In other words, it is focused on the regulation of its own system, which is prerequisite for go to the next level. At growing level performance measurement system could be defined as Balanced Scorecard System. Such performance measurement system is taking into account needs of internal and external stakeholders (shareholders, customers, managers, employees), has multidimensional character, measures that exist in the system are connected among themselves, they show level of strategy implementation, cover long term and short term time horizon, cover most of hierarchy levels of organization. The system could be described as dynamic system, which is renewable at regular periods. The last level of performance measurement evolution is corporate performance management. Corporate performance measurement system could be described as an open system. Organization has processes of natural evolution or self improvement of performance measurement system. It reflects the needs of relevant stakeholders (shareholders, customers, managers, employees, partners, etc.), has multidimensional character, which has different measures and emphasizing the links through the dimensions. System covers all hierarchical levels and term horizons. Organizations which possess more mature of performance measurement system do show better results of performances in relation to external environment of organization. At this level performance measurement system is sophisticated and difficult to achieve.

**Dimension of performance measurement system’s institutionalization**

Dimension of institutionalization could be conceptualized as institutional characteristic of performance measurement systems variables. This dimension could disclose to what level performance measurement system could be formalized and used in IT platforms though communicated through the whole organization. The level of performance measurement systems formalization could be determined analysing institutionalization of organization strategy, goals, processes and measures. Featured characteristics of those variables could be disclosed measuring complexity of strategy, relations between goals, processes and measures. Precondition was made, that the higher level of complexity leads to the lower level of performance measurement systems formalization. In the context of institutionalization strategy could be homogeneous (clearly defined) or heterogenic (complex). The main features of strategy complexity are number of strategic
Clearly defined strategy is easy to institutionalize and communicate using formal IT-based performance measurement system. Some parts of heterogenic strategies usually remain in executives’ minds just as ideas that should be tested but not as formal strategies that are communicated through formal performance measurement system. From other point of view strategy is a set closely related functional strategic goals. To translate one strategic theme into appropriate set of functional goals is not difficult as far as each of those themes and the way how they are implemented from object (product and/or service), place (department) and time point of view. The number of strategic themes means that organization could be innovations driven, customer orientated and efficiency driven. Those themes could be implemented separately in different departments with different products. But on the other hand organization could try to find out the best alternative in particular situation and to test all of them in the same department with the same product at the same time. This situation makes strategy more heterogenic. The more strategic themes organization tries to involve and implement at the same time the more those themes are interrelated the more complex strategy is. Clearly defined strategy is easy to institutionalize and communicate using formal IT-based performance measurement system. Some parts of heterogenic strategies usually remain in executives’ minds just as ideas that should be tested but not as formal strategies that are communicated through formal performance measurement system. From other point of view strategy is a set closely related functional strategic goals. To translate one strategic theme into appropriate set of functional goals is not difficult as far as each of those themes has featured goals. If organization drives innovations and invests in new products, tests or introduces them to the market it usually does not expect growths of profits at the same time. And if organization’s competition is based on the lower level of prices efficiency and profitability becomes critical. Such kind of analyses usually is called strategy mapping. This methodology is effective in that case when strategy is clearly defined and could be easily translated and determining causal relations. But in the case of complex strategy to formalize and communicate all functional goals are too difficult. This means that those goals could present different interests of stakeholders or be defined in conceptual level and could not be involved into the performance measurement system.

Table 1. Integrated framework of performance measurement system development

<table>
<thead>
<tr>
<th>Variables of performance measurement system (x)</th>
<th>Strategy</th>
<th>Goals</th>
<th>Processes</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimension of economics’ cycle (Y₁)</td>
<td>Transition of economic cycle stage determines the nature of strategy: clearly defined, mixed</td>
<td>Economic cycle stage determines priorities of stakeholders interest: shareholders related goals and /or stakeholders related goals</td>
<td>Economic cycle stage determines the level of processes: micro level of value chain and/or processes, related with micro and macro value chain levels.</td>
<td>Goals and core processes determines nature of measures: traditional set of measures and/or multidimensional set of measures.</td>
</tr>
<tr>
<td>Dimension of performance measurement system’s lifecycle level (Y₂)</td>
<td>Numbers of different strategic themes and their implementation determines complexity of strategy: homogeneous or heterogenic.</td>
<td>Number of stakeholders determines complexity of goals: simple or complex goals.</td>
<td>Complexity of strategy and goals determine structure of processes: Simple structure and/or complex structure</td>
<td>Complexity of goals and structure of processes determines number of measures: limited number of measures or wide range of measures.</td>
</tr>
<tr>
<td>Dimension of system’s institutionalization (Y₃)</td>
<td>Institutionalization level of the strategy depends on its complexity: homogeneous strategy is more institutionalized and /or heterogenic strategy is less institutionalized.</td>
<td>Communication level of strategic goals depends on clearness of causal relations between strategic goals: clear causal relations leads to high communication level and/or unclear causal relations leads to low communication level.</td>
<td>Implementation level of strategy depends on strategy institutionalization, goals communication and structure: processes as routines and/or processes as single events.</td>
<td>Communication and implementation levels determine structure of relationship between measures: hierarchical and/or complex.</td>
</tr>
</tbody>
</table>
Homogeneous strategy with clear causal relation between functional strategic goals leads to routine processes that could be measured in hierarchical manner using traditional financial and non financials measures. Those measures could be easily involved in IT decisions of performance measurement system. And vice versa heterogenic strategy leads to complex relations between goals unusual processes and though complex measures that could or could not be formalized in performance measurement system.

**Integrated framework of performance measurement system**

According analyzed theoretical background and presented theoretical debates, we could outline significant variables of performance measurement system (strategy, goals, processes and measures) and its main dimensions (economics’ cycle, life-cycle and formalization). Presented dimensions directly impact characteristics of performance measurement system such as clearness, complexity and advanced. Variations of performance measurement system according selected dimensions are presented in table 1.

Holistic framework was created in order to recognize, but also evaluate or develop performance measurement system in particular organization as well. Evaluation of performance measurement system could be specified by measuring its effectiveness and efficiency. Integrated framework enables to configure measurement of effectiveness and efficiency at structure, conformity (dimension of economics’ cycle), development (dimensions of life-cycle) and (dimension of institutionalization) formalization levels. At different level evaluation of performance measurement system discloses different comprehension of efficiency and effectiveness. At structure level performance measurement system is effective when strategy is translated into set of functional strategic goals and multidimensional measures. Efficiency of performance measurement system could be measured using conceptualization and implementation cost /benefits approach. At conformity level performance measurement system is effective when strategy, goals, processes and measures reflects tendencies of economic cycle stage. Efficiency of performance measurement system could be measured using of timeless of information need. At development level performance measurement system is effective when it fits economic cycle stage. Efficiency of performance measurement system could be measured using application level of systems possibilities. At formalization level performance measurement system is effective when it ensures strategy, goals and processes are institutionalized, communicated and measured using formal procedures and IT decisions. Efficiency of performance measurement system could be measured using conceptualization and implementation level from cost /benefit approach.

Effective and efficient system according to all dimensions could be determined as theoretical conception. However evaluation of its state using multidimensional framework is a possibility for reliable development based on internal and external changes.

**Conclusions**

Changes of external business environment, wide range of stakeholders groups, complexity of organizations structures and processes impact complexity of performance measurement system’s and complicates evaluation of its effectiveness and efficiency. Single dimensional point of view is insufficient to measure them.

Variables of performance measurement system (strategy, goals, processes, measures) determine structure of performance measurement system. Interpretations of those variables from economic cycle point of view enable to analyse priorities of stakeholders and nature of strategy, processes and measures and let evaluate the conformity level. Dimension of system’s life-cycle leads to evaluation of complexity level of strategy, goals and structure of processes but measures and lets to evaluate development level of performance measurement system. Institutionalization and implementation of strategy, communication of goals and relationships between measures determines formalization level of performance measurement system.

Integrated framework enables to analyze and evaluate efficiency and effectiveness of performance measurement system in multidimensional way. Levels of conformity, development and formalization could be measured using dimensions of economic cycle, system’s lifecycle and institutionalization. The main variables of performance measurement system interpreted using three dimensions leads to systemic configuration of system’s problems and integrated view of its efficiency and effectiveness measurement. This in turn enables to find out the most sufficient decisions for system revision and future development. This theoretical integrated framework should be verified empirically.
References


