

The Information Perspective of Management Accounting in Ukraine: The Synergistic Approach and Arrow's Impossibility Theorem

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Modern features of chaotic structuring economy, which implies openness, uncertainty, dynamism and self-organization and fundamentally new requirements of the Information Society, require the creation and study of new approaches to management accounting in informational aspect. In general, modern management accounting should be able to form and provide information including not only existing but also the possible demand for informational support by users. This paper approve hypothesis that use of synergistic approach for formed information provides a comprehensive account of different levels and forms of relationships between elements of accounting and management systems, which enhances the evolution of their integrity and effectiveness, the possibility of multiple development in an unstable economic environment in statistical and dynamic laws and patterns. In terms of building management accounting, as a provider of accounting information management system, synergy causes increasing efficiency of information this system. The author of this paper propose to use a single integrated approach (based on the Arrow's Impossibility Theorem) when implementing management reporting practices of company. The evidence received from 56 industrial Ukrainian companies and 32 agricultural companies of the grain market of Ukraine proved this hypothesis and the use of single integrated approach. Indisputable advantages of synergetic development of management accounting are the ability to enable the system to respond fast to changes in external and internal environment of economic actors, the possibility of providing accounting information and taking into account existing and possible demand for informational support by users, consistent movement of information flows within each company

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1. Introduction

Current global trends in economy and society advance fundamentally new management accounting requirements as a source of information. Financial crisis, the consequences of which experienced the whole world, showed unwillingness of majority of companies to operate in an unstable external economic environment.

Accounting is the primary source of information management and, therefore, globalization and integration of modern society that favored the development of principally new demand for informational support as the society in general and business management system of social relations, conditioned the necessity of its improvement. Information in the economy plays an important role.

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Traditional approaches to management accounting make it difficult to fully satisfy the informational support of society. It reflects the urgency of management accounting in the world in the context of its use as a basic source of the informational management system of economic players.

Thus, the development of management accounting should be determined by:

- 1) Realities of the evolution of economic systems;
- 2) Special needs of international society;
- 3) The informational support of accounting information users.

Structural reorganization in the global economy caused by the transformation from "industrial economy" to "knowledge economy" is the information resource domination. The conducted research allowed us to distinguish specific sources of three fundamental features that characterize the current state of economic evolution systems both internationally and locally of separate states and subjects of management.

The first feature – is a chaotic structuring of the world's economy, which implies openness, uncertainty, dynamism and self-organization. The information provided in management reports to enable users to react the changes in external and internal environment of economic actors (through the consideration of the accidents influence the society and economy). In general, modern management accounting should be able to form and provide information including not only existing but also possible users' informational support. This determine the use of fundamentally new approaches to the information formation in management accounting and the need for comprehensive consideration of various levels and forms of connections between elements of accounting and management systems, evolution of which enhances their integrity and effectiveness, the possibility of multiple development in an unstable economic environment of functioning subjects facilities management including statistical and dynamical laws and regularities, which has the determinant character for overall evolution of the global economic system.

The second feature is the introduction of corporate management for improving economic efficiency and competitiveness of separate economic entities. The importance of corporate governance for the state is determined by its impact on economic and social development. The essence of corporate governance is the system of relations between investors and owners of the company, its managers and shareholders to ensure effective operation of the company, balance of influences and interests of corporate relations. Current world economy is characterized by the increasing attention to corporate governance in conditions of financial markets globalization and capital flows' liberalization.

Besides leading investors, Ukrainian economy was joined by Cyprus, Germany, Netherlands and Austria. Increasing volumes of foreign investment in Ukraine, first of all depends on the ability of Ukrainian companies to provide trust partners and external funding, through the adoption of measures for effective corporate management system implementation. Considering the issues outlined in the plane of Ukrainian legislation it should be specified the presence of clear concept of economic and social development of Ukraine, which provides absolute development of corporate governance. The development and deepening of globalization and integration processes, which are the leading parameters of the modern world economy, have caused the formation of

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extensive third feature that characterizes the current state of economy - fundamentally new requirements for the Society Informational Support.

Taking into account given trends in global economy which are defined the growing influence of information and communication technologies, gradual transition of developed countries from industrial economy to a knowledge-driven economy, among the major macroeconomic tasks in the process of information-oriented society development, the decision of conceptual issues concerning the methodology and organization of provision of information users has been separated.

Plain evidence of information problems existence in the Ukrainian economy, and particularly in the sphere of investment policy and financial market transparency is a substantial reduction in number of joint stock companies in Ukraine. For the past eight years the number of public companies decreased by 78.6%. Informatization of business management should be examined in the compilation with the corporate governance strategy, as these two components of economic relationships are inextricably linked.

Thus, corporate management principles implementation provides Global Information the subjects of Management. Companies should timely, and with the help of accessible means, disclose the complete and accurate accounting information on all the matters affecting them, in order to provide information users (shareholders, creditors, potential investors, etc.) to make informed decisions. Transparency and proper disclosure of accounting information is an essential condition for good corporate governance. Company's activity in transparent mode, with the understood rules of the game helps you to improve its performance, and helps to protect the investors' rights and attract domestic and foreign investments. Disclosure of accounting information about the company is essential for confidence to company's credibility from investors, promotes capital inflows, which is crucial for increasing the company's efficiency, as complete and accurate accounting information enables company's management to estimate the company and develop a strategy for its further development.

This paper has four sections. First, we review the research on problem of management accounting in current economic conditions as basis to form and provide information including not only existing but also the possible demand for informational support by users. Next, we introduce the hypothesis that use of synergistic approach for formed accounting information provides a comprehensive account of different levels and forms of links between the elements of accounting and management systems, which enhances the evolution of their integrity and effectiveness, the possibility of multiple development in an unstable economic environment functioning of administration in view of statistical and dynamical laws and regularities that have the character to the overall evolution of the global economic system. This includes a single integrated approach that based on the synergistic approach and the Arrow's Impossibility Theorem. In the third section, we present the results of analysis supported this hypothesis of management accounting development as information base in information society and knowledge economy through the implementation of multilevel models of management accounting systems development on 56 industrial Ukrainian companies and 32 agricultural companies of the grain market of Ukraine. Then we present the results that allowed formulating the three parameters of the implementation of management accounting reports. The fourth and last section includes the conclusion, and research suggestion.

2. Literature Review

The problem of management accounting in current economic conditions found some coverage in writings of some scientists (including Ahrens & Chapman 2005, Bhimani, Chapman, Cooper & Miller 2009, Bhimani & Bromwich 2009, Berry & Jarvis 1994, Burchell, Clubb, Hopwood & Huges 1980, Bromwich, Chapman, Hopwood & Shields 2006, Everett & Neu 2000, Fess Philip 1987, Gerboth 1973, Hoskin, Macve & Stone 2006).

The urgency of this issue at the international level is confirmed acceptance in recent years a number of relevant international instruments aimed at the regulation of information-oriented society and economy, including the Declaration of Principles (Geneva 2003) and Plan of Action elaborated at the World Summits on the Information Society (Tunisia 2005), Okinawa Charter on Global Information-oriented Society 2001, UN General Assembly Resolution 60/252 on the results of the World Summit on the Information-oriented Society (Geneva 2006). The above statement is consistent with existing international practice. Barry A. and R. Jarvis (1994) asserted that accounting information plays a central role in the business context at the level of companies' strategy, organization and external environment.

However, in the evolution of views of scientists on management accounting formation and functioning in economic environment, synergy is not seen as a necessary factor that should characterize it. The outlined situation has led to low use of synergistic and systemic approaches to management accounting development based on the needs of modern economy and society, and, consequently, individual concepts of accounting systems. The contradictory nature has scientific proposals for the evolution of management accounting as source of information that caused inefficient use of accounting information in operating domestic enterprises. Sound processing requires theoretical and methodological principles of building synergistic management accounting system. Special attention is paid to the questions of synergistic formation of accounting information in the registers in order to meet current and users' future information needs.

The conducted examination of particular sources allowed to state that scholars and practitioners, despite the existence of some methodological differences clearly outlined the traditional concept of providing enterprise management with accounting information in management reporting, at the heart of which information needs of traditional management systems were put.

Different factors influence management effectiveness, what stipulate the necessity of their detailed study through the getting information from reports. General understanding of the notion "factor" (from lat. «factor» - one that does) is a significant fact in any events, processes, initial component of something. Knowledge and identify factors that determine the effectiveness of a particular enterprise management system, provides the opportunity to influence level of performance through enterprise management, which in turn allows you to create mechanisms to search internal reserves to improve these results. That is, factors that ensure the effectiveness of management systems - a force that drives that defines the current financial and economic state of enterprises, the results of its operations, direction and development trends.

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Appropriate level of consideration while management reports preparation determines the usefulness of such reports for internal users in making management decisions.

To provide quality management reporting it is necessary to distinguish clearly between exogenous and endogenous factors in relation to the subject of government.

Exogenous (external) factors constitute a system of variable external factors that create an environment. Appropriate direction should be outlined to take into account the hypothesis of dependence on the external environment was advanced by American scientist Ansoff I. (1999, pp. 412-417), that the problems posed by the external environment to determine the optimal model of firm behavior. In the context of its objective of management accounting it is advisable to consider providing useful information to combat the negative impact of external factors, the reactive behavior on external factors formation that lead companies to equilibrium. Examples of reports that provide information about the exogenous factors may be reports that formed the data on payments with customers, suppliers, tax authorities and other external institutions of society are directly related to the operation of the enterprise and directly influence its activity.

Endogenous (internal) factors are internal components that are within the competence management system. The degree of influence of these factors on an enterprise is evaluated while using internal reports, which provide information on volumes of production, revenues and expenses, payments to workers, the composition and structure of assets and atc. In classical economics, as Russian scientists (Horev & Akulova 2001) note, 1 / 3 of the blame for the bankruptcy of enterprises accounted for external factors and 2 / 3 - for internal.

Therefore, in developing and implementing management reporting forms is indisputable need for a thorough detail of endogenous accounting information and, in general, distinguishes endogenous reports directly to a separate reporting category for which additional analyticity and comparability of indicators, shorter periods and automation of their assembly should be inherent. Thus, while preparing the accounts management reports, accounting information that reflects the changes occurring in external and internal enterprise environment during while its activity, should be taken into account.

Based on these features to ensure the effectiveness of management in the context of its offer to evaluate the effectiveness of information management reporting based on the information capacity of its users:

- Respond to external conditions, for which at the present stage of development of Ukraine a high degree of variability is inherent;
- Respond to inflation processes, the complexity of macroeconomic criteria and their importance in accounting information formation;
- Provide the possibility of managerial decisions prediction;
- Respond to variation rates, criteria and procedures when making management decisions;
- Use along with national currency other floating currencies;
- Provide target adaption to the needs of individual user account.

Using the proposed areas of management accounting valuation, as defined on the basis of a nature and characteristics of exogenous and endogenous factors on the

enterprise functioning, they will help to achieve synergies as a general improvement of the management entity effectiveness from the use of quality management accounting information while making managerial decisions.

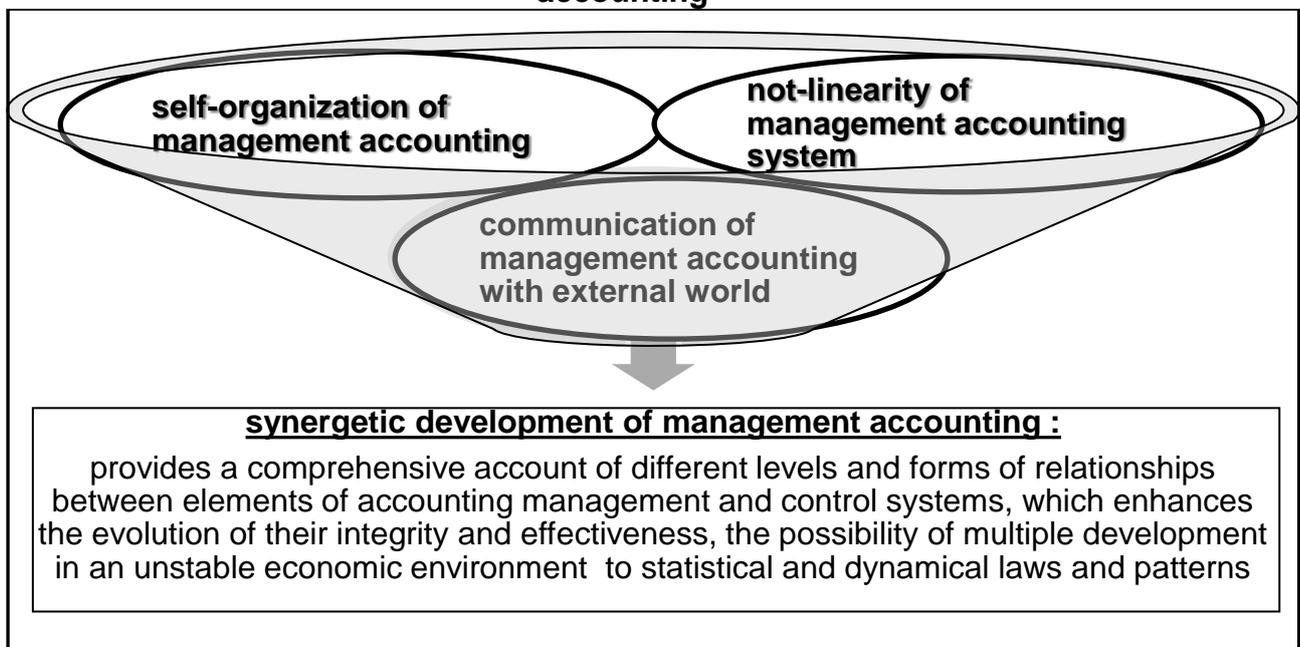
The absence in science and practice the concept of management reporting based on the needs of modern management system, it determines the necessity to solve a number of issues related to quality of information management, the lack of coordination between systems and, consequently, the adoption of inefficient managerial decisions in chaotic and unstable patterned economy.

3. The Methodology and Model

Current features of global and domestic economy, for which incidental openness, uncertainty, dynamism and self-organization, require the creation and study of new scientific approaches to management accounting, the priority of which is a synergistic approach. The synergy is the increasing efficiency as a result of the connection and integration of individual parts into one system. Synergy is the emergency of new productive forces or qualitatively new sources of development, enhancing the effectiveness of a combination of various parts, elements, factors into a single system due to systemic effects (emergency).

Thus, the use of synergistic approach aimed at radically new consideration of contingency and necessity through the recognition of significant accidents in developing scientific theories and provides the possibility of finding more efficient ways to agencies, their organizational relationship reconstruction (fig. 1).

Figure 1: The specific character of synergistic approach in management accounting



In terms of creating management accounting as a supplier of accounting information management system, synergy causes the increasing efficiency of information of such system. Under the word “synergy” we understand accounting information efficiency of information management system of the subject of management through synergies in combination and integration of theoretical, methodological and organizational

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components of the whole spectrum of accounting information in one system and their complex interactions formation and providing.

In connection with this, a special attention should be paid for the need in shaping the directions and implementation in practice of management reports using business management approach. Indisputable advantage of synergetic development of management accounting is:

- 1) The ability to enable the system to respond quickly to changes in external and internal environment of economic actors;
- 2) The possibility of providing accounting information and taking into account existing and possible information needs of users;
- 3) Simultaneous motion of information flows within each company.

The use of synergistic approach in the process of information accounting should be directed at developing methods and techniques, which would provide high-quality accounting information according to established criteria of classification. In addition, please take into consideration some points of views concerning accounting information, necessary to develop information including expectations that have identified potential subjects and use of accounting information. Lines of development formation and implementation in practice of economic entities management reports using a synergistic approach should make the following stages:

- Step 1.** Define user's needs that are implemented to meet management reporting.
- Step 2.** Typical disadvantages of providing accounting information for management reporting.
- Step 3.** Identify areas of evaluating the effectiveness of management accounting reports.
- Step 4.** A single integrated approach to development and implementation of management accounting reports in to practice of the company formation.
- Step 5.** Clarification of management accounting principles in the context of management reports implementation.
- Step 6.** Determination of parameters of the management reports formation
- Step 7.** Development of methodological providing synergic information for the management reporting management
- Step 8.** Practical mechanism of providing synergistic information to management reporting formation.

User's needs, which are implemented, to meet management reporting forms are defined task management system, whose solution requires an obtaining of appropriate accounting information. The analysis showed that the studies of various depth and presentation of material in the following sources (Bhimani & Bromwich 2009, Müller, Ahrens, & Chapman 2005, Mc Grow 1988, Taplin, Bent & Aeron-Thomas 2006) provide a wide range of management tasks.

In order to universalize the developing mechanism and its possible use by a wide range of companies through generalization and clarification of the definitions of tasks in different sources that enterprise managers solve in various directions; and identify common areas of tasks on which decisions by management system, for which there is a need for information management accounting:

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- Accounting data for management decisions systematization.
- Determination of expected profit from one or other economic measures.
- Assessment of various factors on the final results of the company.
- Drawing up the forecast profitability of new types of products.
- Drawing up financial projections for the future of the company.
- Financial evaluation of options for enterprise development.
- Monitoring of enterprise business processes.
- Timely diagnose defects to prevent production losses.
- Monitoring and evaluation of managers.

The advantage of the provided proposal is in task defining areas for which decisions made by the management system, where there is a demand for accounting information and for satisfy in implemented management accounting reports are common to all subjects of the government as concern within each company during certain time periods with different levels of detailing and generalization.

The next step is to assess the effectiveness of directions on management reporting. Performance management reporting is determined by efficiency of the company's system management in the information context. A variety of managerial needs, which are implemented to meet management reporting form, the presence of agents in the practice of a large number of common shortcomings of accounting information for management reporting, the influence of external and internal factors on the enterprise management systems efficiency, puts in the actual plane in the necessity of a single complex approach formation for development and implementation in practice of the particular subject of management reporting.

Basing on the development of this approach it was suggested to use the Arrow's Impossibility Theorem (Arrow K. J. 1963). Summary of the essence of Arrow's Impossibility Theorem proves that there is a democratic social welfare function, which would have carried out the connection between individual preferences and social choice and simultaneously meets the requirements:

- 1) The social welfare function is defined for every admissible pair of individual ordering, R_1, R_2, \dots .
- 2) If an alternative social state x rises or does not fall in the ordering of each individual without any other change in those orderings and if $x \sim_i v$ a preferred to another alternative y before the change in individual orderings then still preferred to y .
- 3) By a "social welfare function" will be meant a process or rule which, for each set of individual orderings R_1, \dots, R_n , for alternative social states (one ordering for each individual), states a corresponding social ordering of alternative social states, R .
- 4) The social welfare function is not to be imposed.
- 5) The social welfare function is not to be dictatorial.

K. Arrow proved that above listed four conditions are in contradiction. Thus, is no social welfare scheme may not meet all these requirements simultaneously. If you understand the social function of information management system of administration, rather than individual preferences to consider the individual needs of specific users, then the K. Arrow theorem, stating that it is impossible to form a democratic way quality management accounting reports that would meet all the requirements that users put forward and at the same time would provide an effective management information system regarding the subject of government generally.

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The only rules for collective decisions, which meets all four criteria listed by K. Arrow, is entirely undemocratic and dictatorial: a collective decision must always reflect the views of one of the representatives. Therefore, when implementing management reporting practices of economic entities, we propose to use a **single integrated approach**: Mandatory identification of the responsible person of the management system, which is responsible for review and approval responsibilities of all components without exception, component forms (reports), management reporting, and prior to their introduction into the accounting system.

That responsible person should be the head of the company - CEO, Director etc. Considering these issues in terms of separate subjects of management with a detailed organizational structure of a complex level of hierarchy, including up consolidated accounts (holding companies, corporations and etc.), it is advisable to appoint an appropriate responsible person as a chief financial manager of the company.

4. The Findings

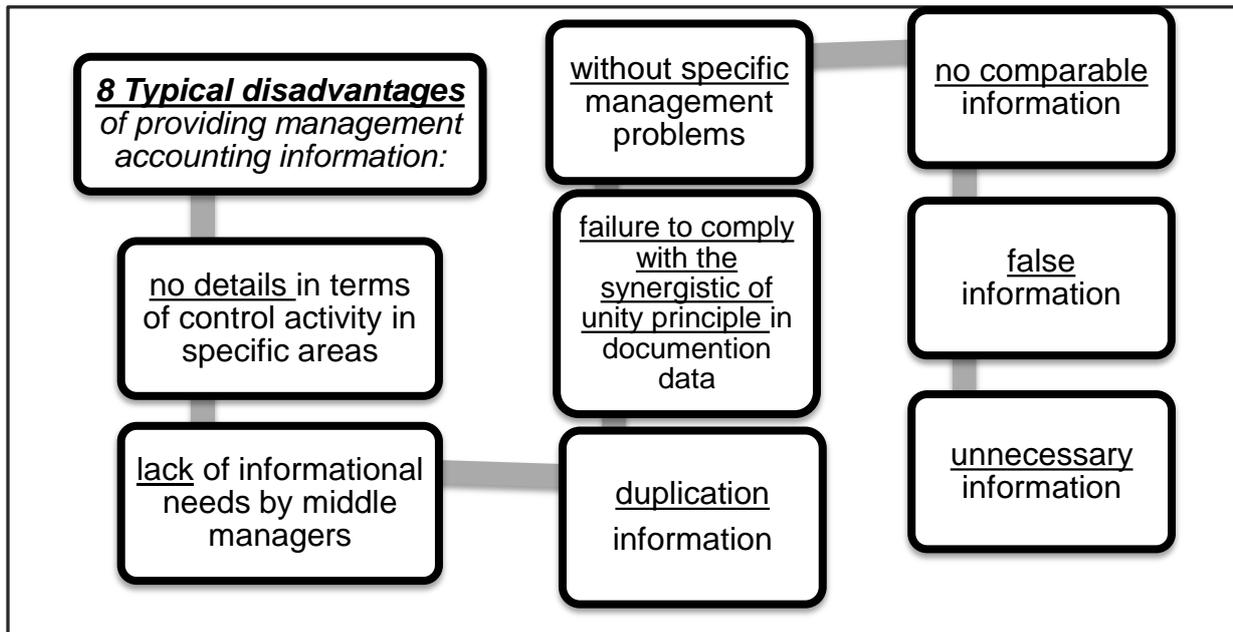
Results of analysis supported this hypothesis of management accounting development as information base in information society and knowledge economy that based on the synergistic approach and the Arrow's Impossibility Theorem through the implementation of multilevel models of management accounting systems development on 56 industrial Ukrainian companies and 32 agricultural companies of the grain market of Ukraine between 2007 and 2013.

The van of the impotent results of research was the formulation of common shortcomings of accounting information in management accounts, which account in developing and implementing forms of accountability increases the general level of its performance management system to control the subject.

Based on the study and synthesis of proposals and scientists received the results of previous research of 56 industrial Ukrainian companies and 32 agricultural companies of the grain market of Ukraine between 2007 and 2012 (Kuznetsova 2009, 2013) on this issue in the practical aspect sets typical shortcomings of accounting information in management reports, which are of common nature (fig.2):

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Figure 2: Typical disadvantages of providing management accounting information in 56 industrial companies and 32 agricultural companies of the grain market of Ukraine between 2007 and 2012



1) Accounting information provision, this seeks to control overall performance of the subject without details in respect to control activity in specific areas - management functions and business units.

2) Lack of information needs of middle managers (e.g., general accounting information for senior managers (directors, etc.), the information interests of the leaders of segments, the structural units are not taken into consideration, and accounting information on required level of particularization is not available).

3) providing accounting information for management reporting, excluding specific management problems for which you need one or another internal report, leading in particular to large amounts of accounting information.

4) Duplication of accounting information due to the absence of a comprehensive approach to implementation forms of management reporting within a particular subject of government.

5) Non-synergetic principle of unity of the process documentation on accounting information.

6) Comparison of accounting information in management reports.

7) Providing false accounting information unsuitable for management.

8) Provision of unnecessary accounting information that is not used by the management control system in general.

Based on the above and received results of previous studies that can be found in (Kuznetsova S. 2011, 2007) and on the previous research of 56 industrial Ukrainian companies and 32 agricultural companies of the grain market of Ukraine between

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2007 and 2012 (Kuznetsova 2009, 2013), specify certain reporting requirements of management accounting in view of the performance of assigned tasks and clarify the information needs of internal users.

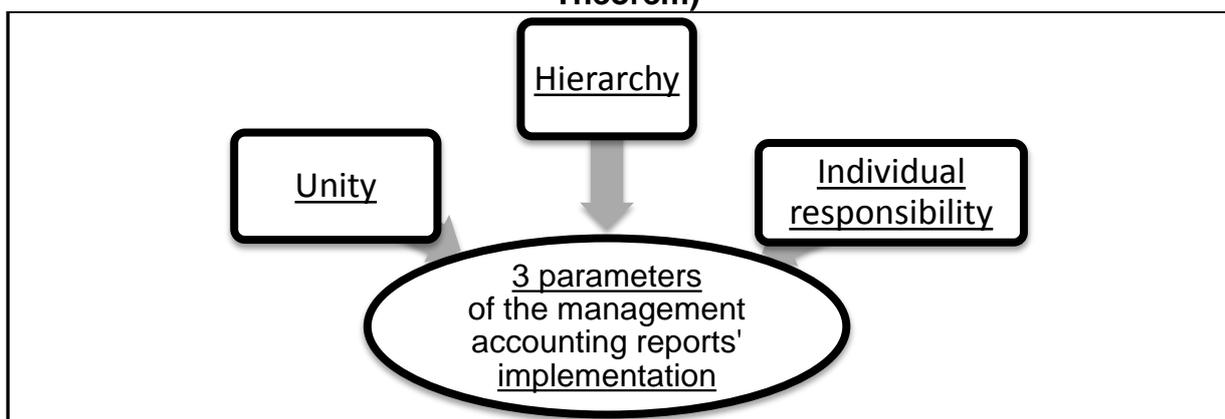
It should also be considered:

- The relevance in view of the materiality (sense) view account information.
- Timely - given the speed presentation of accounting information.
- Compliance requirements aimed at ensuring clarity unambiguous interpretation of accounting information users provided sufficient knowledge - the directors of companies who make management decisions do not necessarily know, for example, accounting records and registers.
- Accuracy - no errors and distortions in reporting that may affect decisions of users; comparability requirement should be considered in terms of comparability of reported data - opportunities to compare reports for different periods and in different centers responsibility and flexibility in the context of the changing certain articles of reporting in connection with the production needs for a more detailed disclosure of accounting information necessary for solving the problem faced by managers.

Consideration of the typical enterprise shortcomings of accounting information in management accounting in developing and implementing forms of accountability will increase the overall level of its performance management system to control the subject.

Our proposal to use a single integrated approach (based on the Arrow's Impossibility Theorem) in 56 industrial Ukrainian companies and 32 agricultural companies of the grain market of Ukraine allowed to formulate the three parameters of the implementation of management accounting reports (fig.3):

Figure 3: The parameters of the management accounting reports implementation: single integrated approach (based on the Arrow's Impossibility Theorem)



1) The single source, under which we understand the terms using which the company head makes a decision on implementation of management reports, taking personal responsibility and control over their implementation. This condition includes receipt of relevant information concerning the need for implementation of management reports from subordinate to supervisor, and appropriate disposal - from manager to subordinate.

2) Hierarchy is streamlining the interaction between levels of government - from the highest to the lowest - in the presence of structural and functional specialization of these levels.

3) Individual responsibility, under which we understand the obligations of all enterprise managers which are responsible for their actions themselves involving the introduction and use of management reports.

In order to fulfill these goals it should be made a start in the ability to meet the specific needs of the management. The main task of accounts management are providing information in this manner and form required of managers, and just when he/she needed it. Information contained in these reports and in many cases fall within the scope of trade secrets to which access is limited.

5. Summary and Conclusions

The results supported hypothesis that use of synergistic approach for formed accounting information provides a comprehensive account of different levels and forms of links between the elements of accounting and management systems, which enhances the evolution of their integrity and effectiveness, the possibility of multiple development in an unstable economic environment functioning of administration in view of statistical and dynamical laws and regularities that have the character to the overall evolution of the global economic system.

The evidence received from 56 industrial Ukrainian companies and 32 agricultural companies of the grain market of Ukraine proved this hypothesis and the efficiency of use of single integrated approach (mandatory identification of the responsible person of the management system, which is responsible for review and approval responsibilities of all components without exception, component forms (reports), management reporting, and prior to their introduction into the accounting system).

Overall indisputable advantages of the proposed methodology is the implementation of multilevel models of management accounting systems development (that based on the synergistic approach and the Arrow's Impossibility Theorem) on 56 industrial Ukrainian companies and 32 agricultural companies of the grain market of Ukraine between 2007 and 2013 that enabled these companies to create a comprehensive feasibility analysis of a specific form of reporting management, promote the application developed on the basis of the Theorem of Impossibility single comprehensive approach to the management reporting forms within a subject management without limitation.

In its turn, a single set of management reporting increases the overall quality of information management activities of business management of these companies. Received by this synergistic effect in 56 industrial Ukrainian companies and 32 agricultural companies of the grain market of Ukraine between 2007 and 2013 is to provide companies with quality management accounting information for management decisions, making estimates, overseeing the areas of enterprise functioning.

Controlling information flows of the enterprise management to coordinate the actions of managers to ensure the implementation of unified policy management in the enterprise, to form a coordinated strategy with the tactics adopted by the company.

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Indisputable advantage of synergetic development of accounting managerial capabilities are enabling the system to react to changes in external and internal environment of economic actors (in particular through the incorporation of the impact of accidents on the society and economy), the possibility of providing accounting information and taking into account existing and possible demand for informational support by users, consistent movement of informational flows within each subject of management.

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