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Summary of doctoral dissertation

**Information quality of financial statements published in
cyberspace**

Jakość informacji w sprawozdaniu finansowym publikowanym w
cyberprzestrzeni

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1) Reasons for the choice of the dissertation topic

"Information is a key element in a free market economy that determines success. (...) Information can bring the corporation to the heights of the business world, but the same information can destroy it" (Kamela-Sowińska, 2014, p. 29). The quoted words by A. Kamela-Sowińska fully reflect the importance of information in the modern economic world, often called knowledge-based economy. This view results from the following trends currently observed in the economy:

- progressive intellectualization and interdisciplinary professions, forcing a continuous learning process,
- globalization of living and economic standards determines the creation of one common global communication system,
- companies' consolidation in one international group influencing the creation of corporate information systems,
- information wars that use propaganda and manipulation of information to enslave the population,
- using perception management and selection of information in order to obtain the desired response from the message recipient (Kamela-Sowińska, 2014, p. 28-35).

Indicated trends are additionally driven by the development of technology. Cyberspace is becoming more and more important in everyday life of all business entities. As a result, we are currently witnessing another scientific revolution consistent with the concept of T. Kuhn and the transition from the industrial paradigm to the information technology paradigm, known also as the paradigm of knowledge. The most important features of the new paradigm include:

- ubiquitous influence of new technologies,
- network system logic,
- flexibility of network operation,
- technology merging into integrated systems,
- convergence of areas of life complexity and openness of the network (Castells 2007, p.78- 83).

These features are the basis for the functioning of the network society, where information is the most important raw material, conditioning the functioning of both

technology and civilization. What is more, information also translates into building cyberspace.

Information becomes the most important resource in the new network society, which function in cyberspace. Its value can be generated when the message is characterized by utility for the recipient. On the other hand, the availability of information in cyberspace translates into the so-called "Information flood" effect, which consequently forces us to select information with respect to its relevance or irrelevance. That is why information characterized with the right quality can be a determinant of success.

Confirmation of the key meaning of cyberspace should be sought in published statistical reports. After analysing and interpreting the results of research, it can be concluded that more than a half of humanity in the world actively uses the Internet in everyday life. Moreover, the growth rate of new Internet users is higher than the rate of growth of population. Thus, more and more people in the world are connected to the network, which co-creates one global village.

Accounting has been an integral part of human existence ever *since the dawn of civilization*. According to A. Kamela-Sowińska: "*accounting was earlier than mathematics because man first had property and had to protect it and then he learned to count and multiply it*" (2017, p. 9). This view is confirmed by research and publications related to the history of accounting. The first tablets with accounting information were already created in ancient Mesopotamia and Egypt (Dobija, 1996, pp. 5-7). After analysing the above-mentioned changes in modern world, the question should be asked: is where accounting currently operating?

The accounting function from the very beginning was informative. It was based mainly on maintaining financial records. The purpose of using accounting was initially to help the human memory with information processing. However, the development of communication technology has forced the use of accounting on a large scale (Świetla, 2014, p. 157). Because of changes in the complexity of business transactions, accounting also had to undergo transformations and adjustments to economic realities.

On the other hand, it was the subsequent stages of accounting development that influenced economic, technological or social progress (Jastrzębowski, 2015, p. 4). It can therefore be concluded that the development of accounting, economic progress and social changes are interrelated. As a consequence, the current socio-economic changes require

from accounting the increasing use of IT solutions and the transition from the real world to cyberspace.

Financial statements are prepared as part of implementation of the accounting information function. In the face of current socio-economic changes, a research question arises whether the financial reports published in cyberspace, as the final product of accounting, provide information of high quality to the recipient in the society of the network.

2) Research problem, purpose of the dissertation and research hypotheses

The premises mentioned in the previous paragraph allowed to determine the research problem for the science of accounting requiring clarification whether the publication of financial statements in cyberspace will have an impact on the quality of information in accounting.

The raised research question allowed to define the research area, namely accounting in cyberspace.

The main purpose of the dissertation is to assess the information quality of financial statements published in cyberspace. In addition to the main goal, further specific objectives were defined:

1. explaining the essence of cyberspace in terms of terminology, features, potential and threats for modern accounting,
2. indication of the information value in accounting,
3. determining the importance of assessing the information quality in accounting,
4. identification of changes taking place in accounting under the influence of cyberspace,
5. determination of the possibility of assessing financial statements published in the cyberspace against the obtained results of the empirical study.

The author decided to give up the hypothesis in order to focus on accomplishing the dissertation main purpose.

Taking into consideration the methodological recommendations and the nature of the undertaken research problem, the author decided to collect primary and secondary data to serve the main and specific purposes. Primary data were collected with the help of an expert interview method, through using a questionnaire. Secondary data were collected as a result of literature research and analysis of financial statement.

3) Dissertation structure

The author has divided the dissertation into five chapters corresponding to the specific objectives.

The first chapter focuses on defining the concepts of cyberspace and the network society. The first part focuses on the description of the most important features, history and problems related to the cyberspace. Subsequently, the most important aspects related to social changes taking place in the world were presented. As a result, the civilizational development process was illustrated as part of A. Toffler's concept in order to present the most important features of the network community and describe the technological paradigm. Then, the use of cyberspace within the network society was presented, taking into account the model of three capitals of P. Bourdieu. At the end of the discussion in the first chapter, the concept of e-economy was presented with underlining the importance of using blockchain technology and smart contracts, which may have a great impact on the development of accounting.

The second chapter consists of three subsections. At the beginning, considerations focus on showing importance of information in the network society. For this purpose, the notion of information was defined, specifying its different aspects and features. As a result, information was defined in terms of resources, as a new factor of production which has a value in the communication process. Then the information system was defined. The considerations focused on defining information technologies and the information system itself, as well as showing the structure of the system and the resources used in it. Accounting became a part of the information system. The definition problem of the term "accounting" was highlighted in order to describe the accounting functions from the point of their usefulness in the communication process. The third part of the chapter describes financial reporting as a tool used in the communication process, emphasizing the importance of information in generating value. The problem of presenting non-financial information and changes in reporting resulting from legal changes was also taken into account.

The considerations in the third chapter refer to the problem of determining the importance of quality in accounting. At the beginning, different approaches to the definition of quality were presented, taking into account philosophical, humanistic, economic, technical and management aspects. Next, the specificity of information quality is described, presenting its meaning in the decision-making process for stakeholders. The next part of

chapter three refers to the problem of measuring the quality of information by comparing general methods with quality methods. Finally, the information quality features in the accounting were described.

The fourth chapter discusses the role of cyberspace in the development of accounting. At the beginning, the legal regulations of accounting referring to cyberspace were analysed. The analysis includes legal acts like Polish Accounting Act, Polish Tax Code, Polish Code of Civil Procedure, OECD guidelines and the EU Directive regarding the integration of central registers, commercial registers and company registers. The next part contains a description of current accounting trends referring to cyberspace, like the use of financial and accounting programs, big data and cloud computing. Next, the definition of integrated reporting was provided as reporting in cyberspace. In this part, the description focused on the nature of integrated reporting, showing the features, advantages and disadvantages as well as the XBRL standard enabling the transition to reporting to the virtual dimension. At the end of the deliberations, the description of the concept of participatory accounting was made. For this purpose, the definition of participatory accounting has been given, its significance for ensuring the quality of information and the use of open-book accounting, continuous audit and on-demand reporting.

The fifth chapter is a description of empirical research. The first part indicates the comparison of financial statements printed and published in cyberspace on the basis of an example of companies listed in WIG 20 index of Warsaw Stock Exchange in order to identify the changes of information quality. Next, the expert study is shown. At the beginning the focus was directed towards asking experts if the assessment of information quality from financial statements published in cyberspace is necessary or not. The conclusions from the expert interview allowed to identify the tools necessary to carry out an information quality assessment for financial statements published in cyberspace. At the end, the experts was asked to predict the potential opportunities and threats arising from the publication of financial statements in cyberspace.

The conclusions consist in the summary of the considerations contained in the dissertation. This part contains a generalization of conclusions and research results from individual theoretical and empirical chapters. This was supplemented with the author's conclusions regarding the cognitive values of the work.

4) Research results and final conclusions

The scientific research carried out in this dissertation enabled the author to achieve the main objective and specific objectives presented in the introduction. As a result of the analysis of literature and financial statements as well as the opinion of financial statement users, it was possible to assess the use of cyberspace on the quality of information. This allowed the author to draw conclusions about the essence of cyberspace and its application in modern financial reporting.

The conclusions from the first chapter concern doubts related to cyberspace. The difficulty at this stage of considerations was the ambiguity and lack of consistency in the terminology associated with cyberspace. As a result, there is no one universal definition of cyberspace.

After analysing various approaches to cyberspace for the purposes of this doctoral thesis, the following original definitions have been created: *cyberspace is a complex environment on a global scale, non-existent in physical form, created from digital networks and human interaction and technical devices that are a place for exchanging, processing and saving information.*

The cyberspace, as a consequence of the latest discoveries in the field of information technologies, became the place of functioning of network society. Moreover, the Internet became the new symbol of network society because it is the basis for the exchange of information. As a result, the man in network society began to be called *homo informaticus*.

A new approach to the functioning of people and machines was included in the technological paradigm. It was assumed that information is a key factor in using machines and technologies which became an integral part of human life. The network society depends on technology and the ability to generate, process and use information effectively.

The use of cyberspace is very common in network society. It can be used in social area by using social networking sites and communication platform, creating new cyber social roles and cyber identity, or negative use in cyber threats, like cybercrime. The cyberspace influences also culture by e-books, e-state, e-cities, e-learning or digitalization of museum collections. However, the most important use of cyberspace from the point of view of accounting is the development of the e-economy. As a result of the use of cloud computing for data archiving, access to information in the e-economy is available to anyone who has

access to the network, regardless of the place where he is located and the time when the need to acquire information arises.

The basis for the functioning of the e-economy is a blockchain. The network constructed in such a way allows for the use of cryptocurrencies and smart contracts, which enables self-actualization of the transaction, without the involvement of third parties, if the pre-agreed conditions are met. Accounting therefore faces the challenge of registering new automated transactions, valuing new virtual money and encrypting the communication process through cyberspace.

The second chapter of the doctoral dissertation was devoted to discussing the information importance in accounting.

Information has been present in people's lives from the beginning, which results from the cognitive necessity of discovering the surrounding world. However, there is no one way of defining the term "information". On the one hand, the original nature of information is postulated, which translates into the lack of attempts to define it. On the other hand, the definition depends on the scientific field and purpose of use. What is more, information cannot be identified with data or knowledge, which constitute separate categories in the communication. The characteristic features of information include: relativity and dynamics of interpretation, fluctuation, inexhaustibility, self-propagation, universality, asymmetry, uniqueness and immateriality. The indicated features determine the use of information in the network society as a resource, a new factor of production or the type of economic good. Thus, it can be assumed that information is the basis for the functioning of the e-economy.

The role of information is especially visible in the communication process. The communication function of information enables the exchange of messages between two parties. As a consequence, it contributes to the appropriate quality of the communication process and building a competitive advantage, which creates the value for information users. However, this quality also depends on the medium of communication. Currently, the Internet is one of the most important ways of communication and information exchange. As a result, it helps in reduction of users' dependence on environmental, temporal and spatial conditions. Thus, information is the basis for the functioning of cyberspace and cyberspace ensures its flow in the network society within information systems.

Cyberspace, thanks to ICT and IT tools, affects the automation of the message transmission process. The process changes also include accounting, which is one of the components of the information system of business entities. Information function is one of the most important function in Accounting. It creates economic information that can then be used by stakeholders through cyberspace, according to individual needs.

Financial reporting is an important tool to implement the accounting information function. Its main product is the financial statements, which over the centuries have been changing and adapting to the changing realities of the economic world. Cyberspace introduces reporting into a new digital reality, where intangible assets become crucial. As a result, new regulations are created in order to adjust accounting to the changes. However, an increase in the scope of disclosed information in reporting leads to the performance disorders. As a consequence, the quality of the information in financial statements must be ensured.

The first problem is with definition of term "quality". It is because the quality perception depends on many factors like: culture, religion, beliefs, customs, morality or law. Moreover, the continuous evolution of the understanding of quality related to social development. As a result, quality is determined in an individual and subjective way.

The second problem is connected with the specificity of information quality. It results from the impossibility of its unambiguous attribution to one specific scientific discipline. It is associated with changes in the level of knowledge caused by scientific and technical development. As a consequence, the determinants of the level of information quality are constantly changing.

What is more, usefulness of the information determines the assessing of the information quality. The variety of potential sources of information influence the individual evaluation and interpretation of the received message. As a result, not every information is useful, and too much information causes a decrease in the quality of the decision-making process. The mentioned difficulties require assessing the quality of information in order to select redundant information.

Many different classifications of quality features can be distinguished in the literature. In each case, the assessment takes place on the basis of a comparison of the indicated features with the existing reality. The quality assessment process can be supported by IT and statistical tools as well as expert research. However, in accounting, the quality assessment

approach is of particular importance because it is based on the information usefulness research from the perspective of the message recipient. There are two perspectives of quality features in accounting regulation. Firstly, Polish National Accounting Standards postulating the usefulness of information fulfilled due to the following qualitative features: relevance, comprehensibility, comparability and faithful representation, met by the truthfulness, objectivity, correctness and compliance with the financial statements. Secondly, Information quality is interpreted by International Accounting Standards as a usefulness, defined by two basic features (relevance and faithful representation) and four additional ones (comparability, verifiability, timeliness and comprehensibility). Both catalogues are designed to provide information about the appropriate quality to a wide audience called stakeholders.

In order to deliver information to stakeholders, accounting is implementing more and more IT tools. Legal changes are another reason for using cyberspace in accounting. Companies are obliged to prepare financial statements in an electronic version and submit them to the state institutions. As a result, the accounting is conducted using big data, workflows in documents sending, accounting programs. The simple work can be also done by robots. Integrated reporting and participatory accounting represent the future use of cyberspace in accounting.

The theoretical conclusions are proved by practical research. The comparison of the printed financial statements with those published in cyberspace showed following differences:

- reducing the costs of publishing information,
- speeding up the publication date,
- wider possibilities of presenting the content.

In the second part of empirical research the interview was conducted with experts using financial statements in daily work. The conclusions are:

- positive assessment of information in financial statements,
- too much focus on presenting financial data and underestimating non-financial data, which leads to the decrease in quality,
- the information quality is hard to assess because of subjective perception and lack of methodology in such research,

- there is need of information assessment in accounting in order to meet all accounting regulations.

The experts created also the classification of quality aspects which are important to measure the information quality in financial statements. The most important include: faithful representation, comparability and verifiability. The less important include: comprehensibility, relevance and neutrality. After the review of methodology of information quality measurement on the Internet, it was possible to identify models which can be implemented in financial reporting. Firstly, the conceptual model can be used to assess the influence of the sector on information in financial statement. The information need of stakeholders can be specified thanks to tools which follow the activity on the website. The last issue includes the assessment of usefulness which can be conducted by seeking stakeholders's opinion through a special questionnaire.

The potential benefits and threats were presented at the end of the dissertation. The opportunities arising from the globalization of communication, information availability, improvement of accounting work efficiency and positive environmental impact due to reduction of paper consumption. Cyberspace generates problems related to information security. The possibilities of uncontrolled data leakage or their modification and the possibility of circumventing online security measures are listed as the gravest threats to the financial statements published in cyberspace.

Having all things considered, it should be emphasized that the dynamic development of information technologies means that the cyberspace impact on the information quality from financial statements published in cyberspace should be the subject of further research.

5) Literature

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