Considerations Regarding the Expansion of the Dimensions of Accounting Information Systems Recording Tools

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Abstract

The purpose of this paper is to synthesize the author's reflections on the amplification of the dimensions of the accounting information system tools. The tools used in the accounting information system are in a period of profound transformations generated by the impact of Information Technology. The hardware and software tools currently available and in the research-implementation stage allow the transition from double-entry accounting - bi-dimensional accounting to multi-dimensional accounting. New perspectives, not approached in the past, are thus opened for the processing of accounting data. Entities have ample possibilities for processing and reporting accounting information. We consider this short paper to be an introduction to research in a field that is in full expansion

Key words: system, accounting, digital
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1. Introduction

The instruments/procedures classically used in the accounting records of entities – the system of accounts, chronological and systematic records – are currently experiencing a process of profound amplification and modification. (www.hyperledger.org)

The widespread application of hardware and software instruments, the Internet, high-speed data networks allow a change of model, of paradigm in accounting. The necessary conditions are currently being created for the multidimensional processing of input data in the accounting computer system. (www.hyperledger.org)

Financial-accounting reporting is able to provide real-time information for decision-makers in the management of the entities' businesses. Multi-criteria accounting reporting is becoming a reality today, surpassing and amplifying the classical paradigm, the double entry in accounting.

It is currently possible to multiply the instances of accounting registers through distributed ledger computer record systems. (www.hyperledger.org)

2. Theoretical context regarding the amplification of the dimensions of the tools used in accounting information systems

In the context of the technologies available for carrying out information activities in the accounting of entities, we can note a series of changes in the accounting paradigm. Today's accountant is able to discern the trends synthesized in modern accounting systems. The use of advanced software for processing accounting input data allows for real-time financial-accounting reporting. (www.hyperledger.org)

New ways of presenting accounting information are available as a new adjunct in the decision-making process by the management of entities, at levels of hierarchical-distributed responsibility. We are in the midst of a storm of data, accounting reporting, data transmission via high-speed WiFi, 5G and 6G networks. (www.hyperledger.org)

The classic ways of accounting reporting are currently outclassed by the use of innovative tools: smartphones, tablets, laptops with unprecedented capabilities for processing accounting information. (www.hyperledger.org)

The use of distributed ledger applications - blockchain - has led to the need to rethink the accounting paradigm. We are facing challenges in terms of amplifying the legal framework for the functioning of entity accounting. The multiplication of instances of the classic accounting register requires legal justification, complementing and amplifying the patrimonial paradigm of accounting.

Research in the field of accounting is facing a series of challenges generated by the transformations in the information - computer system of entities. We are at the center of meta-theoretical changes in accounting constructs. The exponential expansion of data processing through high-speed networks connected to the Internet, correlated with software and hardware tools that have a capacity for processing big data, contributes to amplifying the central role of accountants in modern globalized business management systems. (www.hyperledger.org)

3. Research methodology - empirical aspects of the research regarding the amplification of the dimensions of the recording tools of the accounting information systems

The research methodology used in this article consists of the empirical use of data sets available on the Internet and the construction of accounting record models.

Distributed ledger technologies create new openings in the application of classical accounting concepts. The use of BigData (BD) technologies has made its presence felt in categories of accounting transactions that have a common characteristic: the analysis of large volumes of data in order to make predictions regarding the evolution of indicators in annual financial statements, the completion of predictive budgets/financial statements. Currently, the main characteristic of accounting information systems used by entities is the large volume of available data together with the use of specific methods of processing accounting data. The analysis of trends in the evolution of accounting data offers a quick way to manage information in the digital environment of accounting. There is a growing trend to integrate computer applications with artificial intelligence into accounting, based on the high processing capacities of accounting data, enabled by the use of modern systems – laptops, servers, high-speed telecommunications equipment. (www.hyperledger.org)

Without being able to generalize to all users of accounting software in Romania, from publicly available data, it emerged that both digital accounting applications purchased for a fee and solutions developed internally, at group level, are used as methods for accounting processing of data volumes. The types of data used in accounting are structured data, in monetary format, coming from sources using primary data entry devices. In terms of the types of algorithms used in accounting data processing, these are algorithms for: monitoring/history of accesses; comparing and storing data regarding input data (data history); reports/statistics for input data from primary accounting documents. (www.hyperledger.org)

4. Findings. Assessments on trends in the multidimensional use of entities' accounting tools

Users of accounting information are interested in using accounting software applications that allow data processing and reporting of financial and accounting information in real time.

The implementation of BD (BigData) solutions and data analysis through predictive models have brought competitive advantages to the accounting of the alternative passenger transport sector mediated through digital platforms over traditional forms of passenger transport accounting. The intermediation of transport services through new and innovative technological solutions contributes to increasing the degree of competition in the market and facilitates the interaction between supply and demand. The use of predictive data analysis methods reduces customer waiting time, and the use of dynamic fare setting algorithms gives them the advantage of adjusting rates, in real time, depending on various variables, such as: time, route distance, traffic and demand at the time of requesting the ride. In the market segment of digital applications, the substitutability between alternative passenger transport services and classic transport services is more intense. The competitive pressure generated by alternative transport services has determined the adaptation of

traditional transport service providers to the new digital environment in order to remain competitive. Thus, traditional passenger transport companies have developed their own digital platforms, through which customers can order a transport vehicle from the respective company, platforms similar to those that mediate alternative transport. The own digital platforms of traditional passenger transport companies operate to ensure the transmission of consumer demand to the offer represented by carriers, through transmission and reception stations. The emergence of digital applications that mediate alternative passenger transport services and those of classic companies have redefined the passenger transport services market. The entry into the Romanian market of companies that ensure the digital intermediation of alternative passenger transport services has caused dissatisfaction among traditional companies. (www.hyperledger.org)

According to open access data, Romanian companies are engaged in a broad process of digitalization of accounting reports. Computer applications are used extensively for the acquisition/entry of primary data, systematized processing with devices - laptops, tablets, smartphones, automated generation of reports and financial statements. (www.bnr.ro)

Over 95% in general and 100% in the field of banking, telecommunications, computer applications are used for the accounting of profitable entities. (www.bnr.ro)

5. A case study on aspects of implementing distributed accounting tools

Table no. 1Table of Operations related to the enhancements of accounting tools (*Nicolae, 2010).*

Operations	Descriptions
01.03.2024	The entity Bixty22 sold products in installments on 01.03.2024 in the amount of 50,000,000 monetary units (mu), with recording in the distributed mirror ledger.
01.03.2024	The entries are made in the distributed mirror ledger.
01.03.2024	Installment 1 of 12,500,000 mu of the installment sale is collected
01.03.2025	Installment 2 of 12,500,000 mu of the installment sale is collected
01.03.2026	Installment 3 of 12,500,000 mu of the installment sale is collected
01.03.2027	Installment 4 of 12,500,000 mu of the installment sale is collected
31.12.2024	The interest earned in the amount of 5,000,000 mu related to the installment sale is recorded
31.12.2024	The interest recorded in the distributed mirror register in the amount of 5,000,000 mu is recorded
31.12.2025	The interest earned in the amount of 3,750,000 mu related to the installment sale is recorded
31.12.2025	The interest recorded in the distributed mirror register in the amount of 3,750,000 mu is recorded
31.12.2026	The interest earned in the amount of 2,500,000 mu related to the installment sale is recorded
31.12.2026	The interest recorded in the mirror distributed ledger in the amount of 2,500,000 mu is recorded
31.12.2027	The interest earned in the amount of 1,250,000 mu related to the installment sale is recorded
31.12.2027	The interest recorded in the mirror distributed ledger in the amount of 1,250,000 mu is recorded
01.01.2028	The overall result is recorded in the mirror distributed ledger
01.01.2028	The overall result is capitalized in the mirror distributed ledger

Source: Simulations given by the author

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Table no. 2 Recording the sale of products with installment payments

Debit of Account	Credit of Account	Amount
Installment customers	*Revenue from selling products in installments*	50,000,000
Installment customers	*Anticipated interest revenue*	12,500,000

Source: Simulations given by the author

Table no. 3 Entries are made in the mirror distributed ledger

Debit of Account	Credit of Account	Amount
Distributed ledger X - Customers	*Distributed ledger X - Revenue from sales of products*	50,000,000
Distributed ledger X - Customers	*Distributed ledger X - Customers Distributed ledger X - Deferred interest income*	12,500,000

Source: Simulations given by the author

Table no. 4 The 1-st rate is collected from the sale of products

Debit of Account	Credit of Account	Amount
Available in digital currency	*Installment customers*	12,500,000

Source: Simulations given by the author

Table no. 5 Entries are made in the mirror distributed ledger

Debit of Account	Credit of Account	Amount
Distributed ledger X - Available in Digital Currency	*Distributed ledger X - Customers*	12,500,000

Source: Simulations given by the author

Table no. 6 The 2-nd rate is collected from the sale of products

Debit of Account	Credit of Account	Amount
Available in digital currency	*Installment customers*	12,500,000

Source: Simulations given by the author

Table no. 7 Entries are made in the mirror distributed ledger

Debit of Account	Credit of Account	Amount
Distributed ledger X - Available in Digital Currency	*Distributed ledger X - Customers*	12,500,000

Source: Simulations given by the author

Table no. 8 The 3-rd rate is collected from the sale of products

Debit of Account	Credit of Account	Amount
Available in digital currency	*Installment customers*	12,500,000

Source: Simulations given by the author

Table no. 9 Entries are made in the mirror distributed ledger

Debit of Account	Credit of Account	Amount
Distributed ledger X - Available in Digital Currency	*Distributed ledger X - Customers*	12,500,000

Source: Simulations given by the author

Table no. 10 The 4-th rate is collected from the sale of products

Debit of Account	Credit of Account	Amount
Available in digital currency	*Installment customers*	12,500,000

Source: Simulations given by the author

Table no. 11 Entries are made in the mirror distributed ledger

Debit of Account	Credit of Account	Amount
Distributed ledger X - Available in Digital Currency	*Distributed ledger X - Customers*	12,500,000

Source: Simulations given by the author

Table no. 12 The interest realized in the amount of 5,000,000 mu related to the installment sale is recorded

Debit of Account	Credit of Account	Amount
Anticipated interest income	*Interest income*	5,000,000

Source: Simulations given by the author

Table no. 12b The interest received in the amount of 5,000,000 mu related to the installment sale is recorded

Debit of Account	Credit of Account	Amount
Available in digital currency	*Installment customers*	5,000,000

Source: Simulations given by the author

Table no. 13 The interest recorded in the distributed mirror ledger is recorded

Debit of Account	Credit of Account	Amount
Distributed ledger X - Deferred interest income	*Distributed ledger X - Interest income*	5,000,000

Source: Simulations given by the author

Table no. 13b The interest collected is recorded in the distributed mirror ledger

Debit of Account	Credit of Account	Amount
Distributed ledger X - Available in Digital Currency	*Distributed ledger X - Customers*	5,000,000

Source: Simulations given by the author

Table no. 14 The interest realized in the amount of 3,750,000 mu related to the installment sale is recorded

Debit of Account	Credit of Account	Amount
Deferred interest income	*Interest income*	3,750,000

Source: Simulations given by the author

Table no. 14b The interest received in the amount of 3,750,000 mu related to the installment sale is recorded

Debit of Account	Credit of Account	Amount
Available in digital currency	*Installment customers*	3,750,000

Source: Simulations given by the author

Table no. 15 The interest recorded in the distributed mirror ledger is recorded

Debit of Account	Credit of Account	Amount
Distributed ledger X - Deferred interest income	*Distributed ledger X - Interest income*	3,750,000

Source: Simulations given by the author

Table no. 15b The interest collected is recorded in the distributed mirror ledger

Debit of Account	Credit of Account	Amount
Distributed ledger X - Available in Digital Currency	*Distributed ledger X - Customers*	3,750,000

Source: Simulations given by the author

Table no. 16 The interest realized in the amount of 2,500,000 mu related to the installment sale is recorded

Debit of Account	Credit of Account	Amount
Deferred interest income	*Interest income*	2,500,000

Source: Simulations given by the author

Table no. 16b The interest received in the amount of 2,500,000 mu related to the installment sale is recorded

Debit of Account	Credit of Account	Amount
Available in digital currency	*Installment customers*	2,500,000

Source: Simulations given by the author

Table no. 17 The interest recorded in the distributed mirror ledger is recorded

Debit of Account	Credit of Account	Amount
Distributed ledger X - Deferred interest income	*Distributed ledger X - Interest income*	2,500,000

Source: Simulations given by the author

Table no. 17b The interest collected is recorded in the distributed mirror ledger

Debit of Account	Credit of Account	Amount
Distributed ledger X - Available in Digital Currency	*Distributed ledger X - Customers*	2,500,000

Source: Simulations given by the author

Table no. 18 The interest realized in the amount of 1,250,000 mu related to the installment sale is recorded

Debit of Account	Credit of Account	Amount

Source: Simulations given by the author

Table no. 18b The interest received in the amount of 1,250,000 mu related to the installment sale is recorded

Debit of Account	Credit of Account	Amount
Available in digital currency	*Installment customers*	1,250,000

Source: Simulations given by the author

Table no. 19 The interest recorded in the distributed mirror ledger is recorded

Debit of Account	Credit of Account	Amount
Distributed ledger X - Deferred interest income	*Distributed ledger X - Interest income*	1,250,000

Source: Simulations given by the author

Table no. 19b The interest collected is recorded in the distributed mirror ledger

Debit of Account	Credit of Account	Amount
Distributed ledger X - Available in Digital Currency	*Distributed ledger X - Customers*	1,250,000

Source: Simulations given by the author

Table no. 20 The overall result is recorded in the accounting of the reporting entity

Debit of Account	Credit of Account	Amount
Interest income	*Comprehensive result*	12,500,000

Source: Simulations given by the author

Table no. 21 The overall result is recorded in the mirror distributed ledger

Debit of Account	Credit of Account	Amount
Distributed ledger X - Interest income	*Distributed ledger X - Comprehensive result*	12,500,000

Source: Simulations given by the author

Table no. 22 The capitalization of the comprehensive result is recorded in the accounting of the reporting entity

Debit of Account	Credit of Account	Amount
Comprehensive result	*Equity instruments*	12,500,000

Source: Simulations given by the author

Table no. 23 The capitalization of the global result in the mirror distributed ledger is recorded

Debit of Account	Credit of Account	Amount
Distributed ledger X - Comprehensive result	*Distributed ledger X - Equity instruments*	12,500,000

Source: Simulations given by the author

6. Conclusions

We are currently witnessing – in my opinion – an unprecedented process of amplifying the dimensions of accounting information systems. Entities have possibilities amplified to the Nth power of processing input data into the accounting system, leading to reporting of accounting information enriched with new valences in supporting users of financial accounting statements.

Accounting – as a discipline with a thousand-year history – is in a process of decoupling from the classic system of accounting registers towards a multidimensional presentation of information. (www.hyperledger.org)

The classic paradigm of double-entry accounting is being surpassed towards integrated reporting of accounting data in a multidimensional format.

7. References

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