Aspects Regarding the Multidimensionality of Accounting Information Systems Tools

Traian Cristin Nicolae
„Ovidius" University of Constanta, Faculty of Economic Sciences, Romania
traian.nicolae.profesor@gmail.com

Abstract

The purpose of this paper is to present in summary the reflections on Aspects regarding the multidimensionality of accounting information systems instruments. The widespread spread of systems, computer applications used by entities for processing accounting data determines the modification of the classical paradigm of accounting records. We observe the transition from classical records based on paper accounting registers to the recording of accounting transactions in multi-dimensional databases. The computerized recording of financial-accounting transactions allows entities to report accounting information in a multidimensional system, allowing the amplification of the classical double-entry accounting system in accounting reports. The present paper is intended to be a research oriented towards the presentation of the multidimensionality of accounting information systems instruments.

Key words: accounting system, multidimensionality
J.E.L. classification: M41, G32.

1. Introduction

The tools used in the accounting records of for-profit entities have experienced an exponential growth in terms of their capabilities for processing accounting data and for integrated reporting of financial transactions. (www.hyperledger.org)

The traditional accounting system, based on the double-entry model, has the following characteristics (www.hyperledger.org):

• Financial orientation: the emphasis is on historical financial information.
• Linear structure: data is recorded sequentially, in accounting journals and ledgers.
• Focus on the economic entity: it reflects only transactions that directly affect the entity's assets.
• Main users: shareholders, creditors, tax authorities.

This model, although robust, does not allow for the provision of the currently required set of information, especially in the context of the digital economy and globalization.

A multidimensional accounting system extends the capacity for analysis and reporting by:

• Integration of multiple dimensions: time, location, product, customer, distribution channel, sustainable development.
• Support for managerial decisions: provides relevant information for planning, control and evaluation of the performance of the management of entities.
• Flexibility in reporting: allows the generation of personalized reports for different users.
• Correlation with other information systems: ERP, BI, CRM. (www.hyperledger.org)

2. Theoretical background

In the context of available technologies, the following approaches are possible :

• Systems theory: accounting is seen as a subsystem of the organization's information system.
• Shareholder theory: recognizes the diversity of users of accounting information and their specific needs.

• Decision theory: focuses on the usefulness of accounting information in the decision-making process.

• Multiple representation theory: supports the use of multiple perspectives and dimensions to reflect the complexity of economic reality.

Practical implementation of multidimensional accounting involves (www.hyperledger.org):

• Use of relational databases and OLAP (Online Analytical Processing).

• Data cube modeling: each dimension represents an angle of analysis (e.g. sales by region, by product, by period). (www.hyperledger.org)

• Automation of accounting processes: through integration with advanced information systems.

The challenges and prospects of increasing the dimensions of accounting information systems' recording tools can be summarized as

• Increased complexity: requires advanced IT and data analysis skills.

• Standardization and regulation: lack of universal accounting norms for multidimensional systems. (www.hyperledger.org)

• Data security: managing large volumes of information involves cyber risks.

3. Research methodology

The research methodology used in this study uses the processing of data available on the internet and the construction of accounting record models.

Implementing a multidimensional accounting system involves:

• Adopting modern technologies: OLAP databases, ERP systems, Business Intelligence tools.

• Redefining accounting processes: from simple recording to data analysis and interpretation.

• Continuous professional training: accountants must acquire skills in data analysis and the use of IT tools. (www.hyperledger.org)

An updated list of the most popular accounting applications used by companies in Romania in 2025, according to integration with ANAF e-Invoice and modern functionalities, including AI. (www.ziare.ro)

Table no. 1 Comparative table of accounting software applications

Application name	Platform type	e-Invoice Integration	Key functionalities
SmartBill	SaaS (web + mobile)	Yes	Facturare, gestiune stocuri, NIR, rapoarte, integrări e-commerce
Oblio	SaaS (cloud)	Yes	Facturare rapidă, import/export facturi, integrări cu SAGA/WinMentor
FGO	SaaS (cloud)	Yes	e-Invoice, archiving, banking integration, real-time reports
SAGA	Desktop (Windows)	Yes	Complete accounting, payroll, ANAF declarations
Keez	SaaS + accounting service	Yes	Digital accounting, AI for documents, automatic declaration generation
WinMentor	ERP (desktop)	Yes	Complete accounting, SAF-T, e-Transport
EasyBill	SaaS (cloud)	Yes	Billing, connection with banks, digital archiving

Application name	Platform type	e-Invoice Integration	Key functionalities
ContApp	SaaS (web + mobile)	Yes	Accounting for PFA, fiscal AI, document scanning
SoftOne ERP	ERP (cloud)	Yes	Full ERP, AI for predictions, SAF-T reporting
Charisma ERP	ERP (cloud/on-prem)	Yes	Issuance of invoices, digital signature, approval flows

Source: Author's processing public data

Comparative table of popular accounting applications in Romania in 2025, evaluated based on three criteria: level of automation, AI functionalities and popularity in SMEs vs. entities (www.ziare.ro):

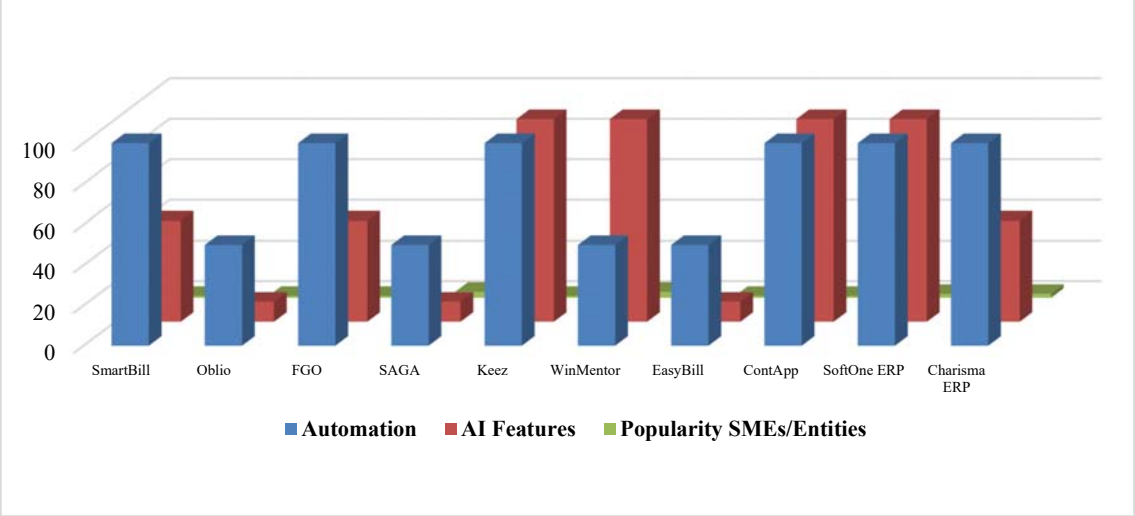
Table no. 2 Comparative table of accounting applications grouped by 3 criteria

Application	Automation	AI Features	Popularity SMEs/Entities
SmartBill	100	50	1
Oblio	50	10	1
FGO	100	50	1
SAGA	50	10	3
Keez	100	100	1
WinMentor	50	100	3
EasyBill	50	10	1
ContApp	100	100	1
SoftOne ERP	100	100	2
Charisma ERP	100	50	2

Source: Author's processing public data

Legend:
High = 100, Average = 50, Low = 10
Yes =1, No = 0
SME Popularity =1, Entity Popularity = 2, SME/Entity Popularity = 3

Figure no. 1 Comparative chart of accounting applications grouped by 3 criteria



Source: Author's processing public data

4. Findings

Users of accounting information are interested in accessing financial and accounting data in real time.

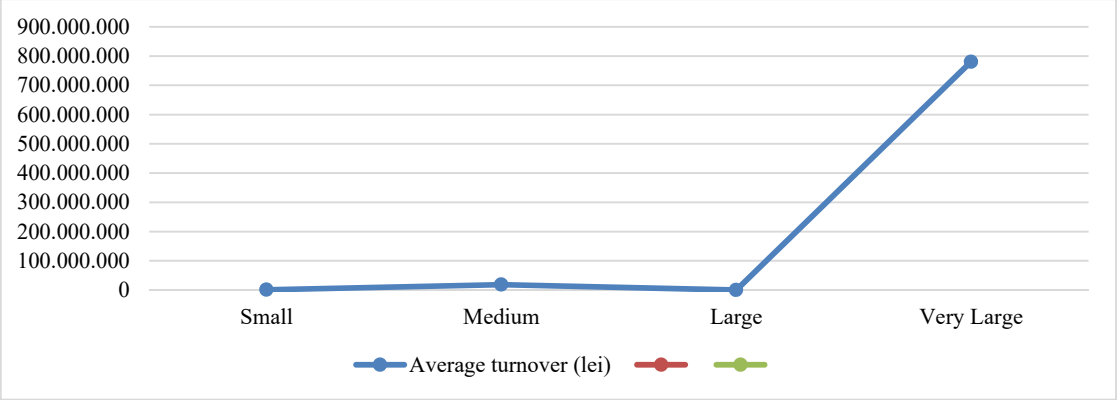
Categories of entities are grouped into 4 categories: - Small Entities, - Medium Entities, - Large Entities, - Very Large Entities.

Table no. 3 Section: General - Turnover

Categories of entities	Average turnover (lei)
Small	1.200.000
Medium	18.500.000
Large	145.300.00
Very Large	780.600.000

Source: Author's processing public data

Figure no. 2 General comparative chart - Turnover



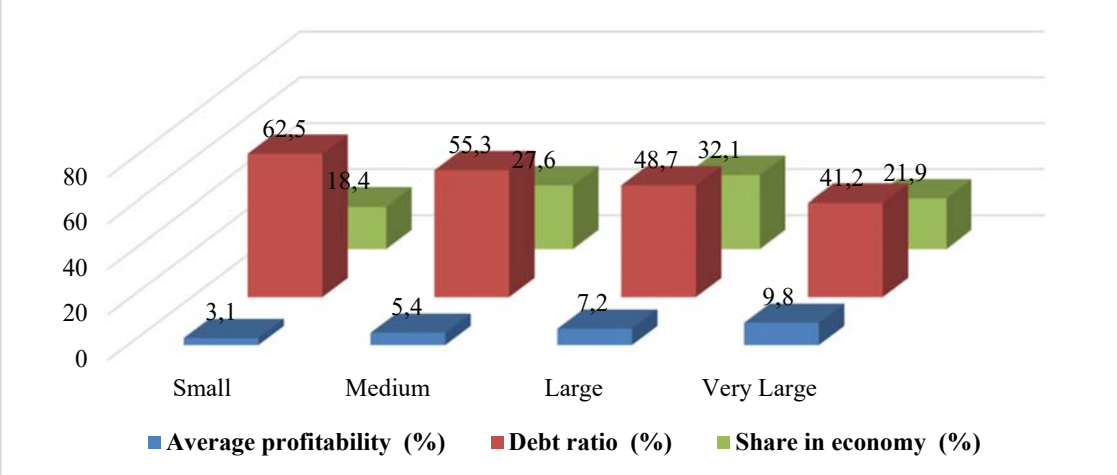
Source: Author's processing public data

Table no. 4 Section: General - Indicators

Categories of entities	Average profitability (%)	Debt ratio (%)	Share in economy (%)
Small	3.1	62.5	18.4
Medium	5.4	55.3	27.6
Large	7.2	48.7	32.1
Very Large	9.8	41.2	21.9

Source: Author's processing public data

Figure no. 3 General comparative chart - Indicators



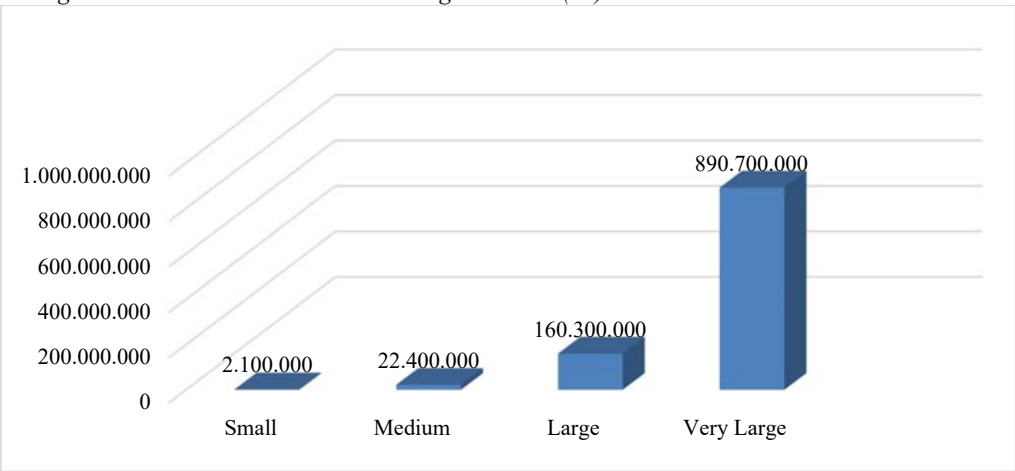
Source: Author's processing public data

Table no. 5 Section: Industrial - Turnover

Categories of entities	Average turnover (lei)
Small	2.100.000
Medium	22.400.000
Large	160.300.000
Very Large	890.700.000

Source: Author's processing public data

Figure no. 4 Section: Industrial – Average turnover (lei)



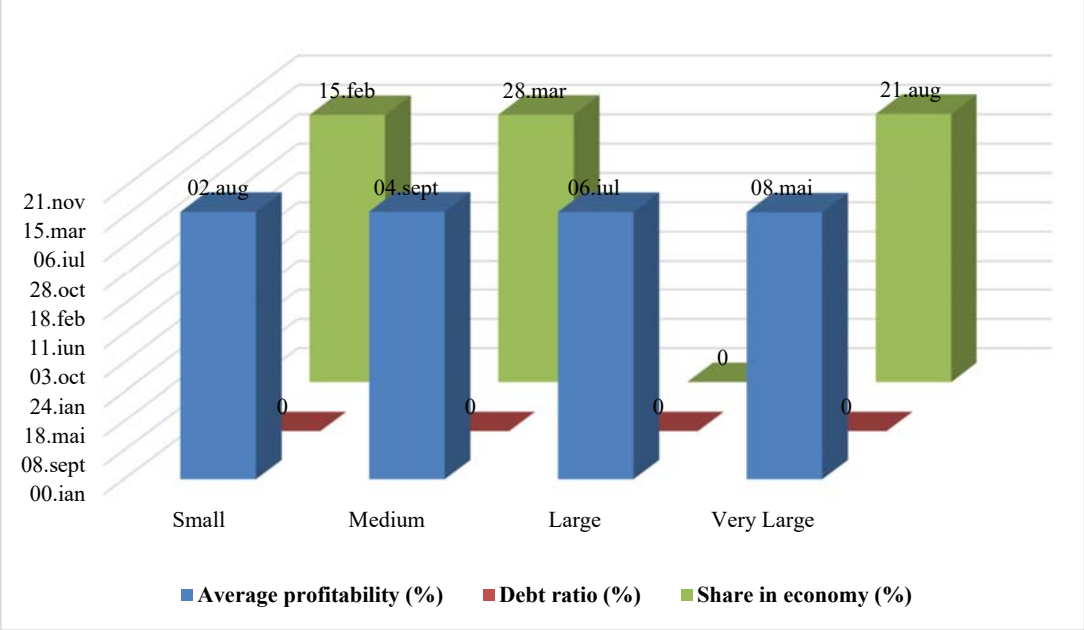
Source: Author's processing public data

Table no. 6 Section: Industrial - Indicators

Categories of entities	Average profitability (%)	Debt ratio (%)	Share in economy (%)
Small	2.8	65.2	15.2
Medium	4.9	58.1	28.3
Large	6.7	50.4	34.7
Very Large	8.5	43.9	21.8

Source: Author's processing public data

Figure no. 5 Section: Industrial - Indicators



Source: Author's processing public data

It can be appreciated that the above data translate into the applicability of advanced software solutions on a large scale for large and very large entities. At the same time, current software solutions are also used for small and medium-sized entities.

5. Study on aspects of the multidimensionality of accounting records

Accounting Information

-Accounting Proposals - Author

Table no. 7 Table of proposed operations

	Hypothetical operations
01.01.2025	The entity Master77 purchased on 01.01.2025 a license for an accounting software program worth 10,000,000 monetary units (mu), with duplication in Cloud files.
01.01.2025	Records are made in the registers - Cloud files.
01.02.2025	The payment of the installment of 1,000,000 mu is recorded.
01.02.2025	Records are made in the Cloud registers - files.
01.03.2025	The payment of the installment of 1,000,000 mu is recorded.
01.03.2025	Records are made in the Cloud registers - files.
01.04.2025	The payment of the installment of 1,000,000 mu is recorded.
01.04.2025	Records are made in the Cloud registers - files.
01.05.2025	The payment of the installment of 1,000,000 mu is recorded.
01.05.2025	Records are made in the Cloud registers - files.
01.06.2025	The payment of the installment of 1,000,000 mu is recorded.
01.06.2025	Records are made in the Cloud registers - files.
01.07.2025	The payment of the installment of 1,000,000 mu is recorded.
01.07.2025	Records are made in the Cloud registers - files.
01.08.2025	The payment of the installment of 1,000,000 mu is recorded.
01.08.2025	Records are made in the Cloud registers - files.
01.09.2025	The payment of the installment of 1,000,000 mu is recorded.
01.09.2025	Records are made in the Cloud registers - files.
01.10.2025	The payment of the installment of 1,000,000 mu is recorded.
01.10.2025	Records are made in the Cloud registers - files.
01.11.2025	The payment of the installment of 1,000,000 mu is recorded.
01.11.2025	Records are made in the Cloud registers - files.

Source: Working hypotheses

Logging records

(Author proposed records)

Table no. 8 Registration of the purchase of the license for the accounting software

Proposed debit account	**Proposed credit account**	**Amount**
Accounting software license	Providers of IT services	10,000,000

Source: working hypotheses

Table no. 9 Entries are made in the registers - Cloud files

Proposed debit account	**Proposed credit account**	**Amount**
Account register - Cloud - Accounting software license	Account register - Cloud - IT service providers	10,000,000

Source: working hypotheses

Table no. 10 Records the payment of installment 1 of 1,000,000 mu

Proposed debit account	**Proposed credit account**	**Amount**
Royalty expenses - software	Available in digital currency	1,000,000

Source: working hypotheses

Table no. 11 Rate 1 records are made in the Cloud registers - files

Proposed debit account	**Proposed credit account**	**Amount**
Ledger account - Cloud - Royalty expenses - software	Ledger Account - Cloud - Available in Digital Currency	1,000,000

Source: working hypotheses

Table no. 12 Records the payment of installment 2 of 1,000,000 mu

Proposed debit account	Proposed credit account	Amount
Royalty expenses - software	Available in digital currency	1,000,000

Source: working hypotheses

Table no. 13 Rate 2 records are made in the Cloud registers - files

Proposed debit account	Proposed credit account	Amount
Ledger account - Cloud - Royalty expenses - software	Ledger Account - Cloud - Available in Digital Currency	1,000,000

Source: working hypotheses

Table no. 14 Records the payment of installment 3 of 1,000,000 mu

Proposed debit account	Proposed credit account	Amount
Royalty expenses - software	Available in digital currency	1,000,000

Source: working hypotheses

Table no. 15 Rate 3 records are made in the Cloud registers - files

Proposed debit account	Proposed credit account	Amount
Ledger account - Cloud - Royalty expenses - software	Ledger Account - Cloud - Available in Digital Currency	1,000,000

Source: working hypotheses

Table no. 16 Records the payment of installment 4 of 1,000,000 mu

Proposed debit account	Proposed credit account	Amount
Royalty expenses - software	Available in digital currency	1,000,000

Source: working hypotheses

Table no. 17 Rate 4 records are made in the Cloud registers - files

Proposed debit account	Proposed credit account	Amount
Ledger account - Cloud - Royalty expenses - software	Ledger Account - Cloud - Available in Digital Currency	1,000,000

Source: working hypotheses

Table no. 18 Records the payment of installment 5 of 1,000,000 mu

Proposed debit account	Proposed credit account	Amount
Royalty expenses - software	Available in digital currency	1,000,000

Source: working hypotheses

Table no. 19 Rate 5 records are made in the Cloud registers - files

Proposed debit account	Proposed credit account	Amount
Ledger account - Cloud - Royalty expenses - software	Ledger Account - Cloud - Available in Digital Currency	1,000,000

Source: working hypotheses

Table no. 20 Records the payment of installment 6 of 1,000,000 mu

Proposed debit account	Proposed credit account	Amount
Royalty expenses - software	Available in digital currency	1,000,000

Source: working hypotheses

Table no. 21 Rate 6 records are made in the Cloud registers - files

Proposed debit account	Proposed credit account	Amount
Ledger account - Cloud - Royalty expenses - software	Ledger Account - Cloud - Available in Digital Currency	1,000,000

Source: working hypotheses

Table No. 22 Records the payment of installment 7 of 1,000,000 mu

Proposed debit account	Proposed credit account	Amount
Royalty expenses - software	Available in digital currency	1,000,000

Source: working hypotheses

Table no. 23 Rate 7 records are made in the Cloud registers - files

Proposed debit account	**Proposed credit account**	**Amount**
Ledger account - Cloud - Royalty expenses - software	Ledger Account - Cloud - Available in Digital Currency	1,000,000

Source: working hypotheses

Table no. 24 Records the payment of installment 8 of 1,000,000 mu

Proposed debit account	**Proposed credit account**	**Amount**
Royalty expenses - software	Available in digital currency	1,000,000

Source: working hypotheses

Table no. 25 Rate 8 records are made in the Cloud registers - files

Proposed debit account	**Proposed credit account**	**Amount**
Ledger account - Cloud - Royalty expenses - software	Ledger Account - Cloud - Available in Digital Currency	1,000,000

Source: working hypotheses

Table no. 26 Records the payment of installment 9 of 1,000,000 mu

Proposed debit account	**Proposed credit account**	**Amount**
Royalty expenses - software	Available in digital currency	1,000,000

Source: working hypotheses

Table no. 27 Rate 9 records are made in the Cloud registers - files

Proposed debit account	**Proposed credit account**	**Amount**
Ledger account - Cloud - Royalty expenses - software	Ledger Account - Cloud - Available in Digital Currency	1,000,000

Source: working hypotheses

Table no. 28 Records the payment of installment 10 of 1,000,000 mu

Proposed debit account	**Proposed credit account**	**Amount**
Royalty expenses - software	Available in digital currency	1,000,000

Source: working hypotheses

Table no. 29 Rate 10 records are made in the Cloud registers - files

Proposed debit account	**Proposed credit account**	**Amount**
Ledger account - Cloud - Royalty expenses - software	Ledger Account - Cloud - Available in Digital Currency	1,000,000

Source: working hypotheses

6. Conclusions

In my opinion, the evolution of accounting towards a multidimensional system is not just a technological trend, but a strategic necessity. It allows entities to transform accounting data into valuable information for decision-making, to better respond to shareholder demands and to adapt to a constantly changing economic environment.

The widespread use of distributed accounting software applications allows entities to create a multidimensional accounting system.

Real-time queries and the presentation of multi-parameter reports to company administrators are possible for making decisions imposed by the economic and social environment subject to changes that have a random nature.

7. References

- IASB (International Accounting Standards Board), 2011. *International Financial Reporting Standard 13 Fair Value Measurement*. [online] Available at: http://eifrs.ifrs.org
- IASB, 2022. *International Financial Reporting Standards (IFRSs)*. [online] Available at: http://eifrs.ifrs.org.

- Nicolae, T., 2010. *Standarde contabile [Accounting standards]*. Constanta: Ex Ponto Publishing House.
- Nicolae, T.C., 2015. *Contabilitate financiară aprofundată: caiet de studiu individidual: învățământ la distanță(ID) [Advanced financial accounting: individual study book for distance learning (DL)]*. Constanta: Ovidius University Press Publishing House.
- Nicolae, T.C, 2025. *Contabilitate consolidată: caiet de studiu individual: învățământ la distanță [Consolidated Accounting: Individual Study Notebook: Distance Learning]*. Constanta: Ovidius University Press.
- * * * *Law of the Fiscal Code of Romania*
- www.arbc.ro
- www.bnr.ro.
- www.cdep.ro.
- www.ccr.ro.
- www.insse.ro
- www.ziare.ro
- www.hyperledger.org