

INTERNAL AUDITING & RISK MANAGEMENT



YEAR XIX, No. 1 (69), March 2024



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USING VARIOUS DATA SOURCES TO OPTIMIZE THE FLOWS REQUIRED IN ECONOMIC APPLICATIONS

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Abstract: *The paper presents the usage of various sources of data for optimization in economic applications. Economic IT systems are designed to streamline and automate the processing, record keeping and reporting of transactions. Record current information and maintain database of transaction information. The quantitative and even qualitative increase in the information obtained from the processing of daily transactions did not lead to significant changes in the quality of the decisions made. There are numerous options for data processing, information evaluation, adaptation to changes. While transactional systems emphasize the integrity and consistency of data, being managed as a whole, interactive decision support systems regroup data spread across several databases according to a defined purpose, manage data organized distinctly by analysis subjects. Broken down by operational departments, the decisions are found in directives necessary for operational management and consider the particularities of the functional departments. The simulation is done on models of the field of application and facilitates the decision-maker's choice of measures imposed by reality, by the concrete conditions in which the activity is carried out. Presented and sometimes even used independently, management systems make up a unitary system at the company level. Integrating specific information and communicating at different managerial levels, based on the data recorded in the primary documents, builds decisions for the entire company. By implementing some mathematical models and using the calculation technique in the specific activities, the information system prints increased valences to the information system from a quantitative and qualitative perspective.*

Keywords: *economic problems, computer systems, economic flows, data from external environment, data interpretation, design for economic applications*

JEL Classification: C23, C26, C38, C55, C81, C87

1. Introduction

The use of the computing technique produced changes in the way of carrying out the activities carried out within an information system, and implicitly determined the emergence of the concept of an information system. The computer system is a set of functionally intercorrelated elements for the purpose of automating the obtaining of the information necessary to support decisions. Computer systems are presented in the form of a „black box” that has information inputs that are transformed into information to substantiate decisions by means of resources, rules, procedures. The information system connects the managed system and the management system, being subordinate to them. This link is bidirectional. It can be said that the information system is the „shadow” of the economic processes in the unit. The computer system is included in the information system and has as its object of activity, in general, the process of collecting, verifying, transmitting, storing and automatically processing data (data is the raw material, and information is the finished product).

By implementing some mathematical models and using the calculation technique in the specific activities, the information system prints increased valences to the information system under a quantitative and qualitative aspect. It is about increasing the computing capacity in terms of the volume of data processed and the operations performed, increasing the accuracy of information, increasing the operability, complexity and completeness of reporting-information situations, etc. All this determines a closer proximity of the decision-maker to the economic phenomena and processes that he has in mind, with the multitude of positive economic aspects that derive from this (Coronel, 2023; Gessert, 2023).

Regarding the relationship between the computer system and the information system, it can be appreciated that the computer system tends to equalize the dimensions of the information system, but it does not have the same scope as the latter, because within the information system there may be activities that cannot be automated. The computer systems are included in the information systems, and they are intended to serve the management of the economic unit, so it can be appreciated that the main objective of the IS coincides with the general objective of the basic economic activities.

The main objective pursued by the introduction of an IS is the selective and timely provision of all levels of management with necessary and real information for the substantiation and operative elaboration of decisions regarding the most efficient performance of all activities in the economic unit.

2. Usage of economic data in the applications that are included in information systems

The main objective of the economic activity therefore refers to the entire activity in the economic unit. In order to get to know the activity more closely, and to carry it out in the best conditions, other secondary objectives can be defined, which are called “conditions” for the achievement of the main objective. There must be compatibility between the main objective and the secondary objectives, in the sense that the achievement of the secondary objectives must lead to the achievement of the main objective.

From the point of view of the fields of activity on which the economic effects are reflected, they can be classified into:

a) General objectives – are the objectives that affect the basic activity within the economic unit (supply, production, sales).

Objective example: Increasing the degree of loading of the production capacity. It is achieved by implementing mathematical models, planning, programming, ordering, launching and tracking production. OR through the implementation of advanced models and techniques for planning overhauls and capital repairs of machinery.

Objective example: Increasing labor productivity. It is achieved through the rational use of the labor force (the operative monitoring of personnel activity is carried out on the computer).

Objective example: Optimum use of transport capacity. It is achieved by implementing mathematical models that optimize transport routes, correlating the volume of goods to be transported with the capacity of the means of transport.

Example objectives: Reducing the number of administrative staff. Increasing the profit and profitability of the economic unit.

b) Specific objectives - are the objectives that affect the functioning of the information system.

Objective example: Increasing the response speed to beneficiary requests. Increasing accuracy and precision in the process of processing data and informing management. Ensuring the completeness of information necessary for management. Ensuring the appropriateness of information necessary for management. Simplification and rationalization of information flows.

The economic effects of achieving the objectives related to the functioning of the information system are difficult to quantify, but they can be estimated. In the end, they will positively influence the development of the

basic activity. In conclusion, the economic effects of IT implementation are direct and indirect.

From the point of view of the possibilities of quantifying the effects of the objectives, they can be classified into:

a) Quantifiable objectives (quantitative): increase in production volume, decrease in transport expenses, decrease in specific consumption of raw materials and materials;

b) Non-quantifiable objectives (of a qualitative nature): increasing the prestige of the economic unit - it is achieved, for example, by increasing the quality of production (or services), decreasing the refusals of the beneficiary (the number of complaints).

At the level of an economic unit, a lot of objectives can appear, but since the resources to achieve them are limited, it is necessary to know and prioritize them according to the management's requirements. By presenting the objectives to the management and then among the employees, there is the possibility of getting to know them, of better understanding the requirements that impose the achievement of the objectives, and as a result, a closer and wider acceptance of all the factors that can compete in the implementation of the systems will be acquired informatics (Paton, 2023; Dayal, 2023).

Depending on the field of activities to which it refers, the field of use:

a) The computer system for the management of economic and social activities. Their specificity is the fact that the input data is usually provided by human-made documents (or manually entered data). The output data are provided by the system in the form of documents (lists, reports, graphs, etc.) for a better perception of them by humans.

b) The computer system for the management of technological processes - it is characterized by: The input data are provided in the form of signals (electronic impulses) transmitted by certain devices automatically, which characterize various parameters of the technological process: pressure, temperature, humidity, composition. The output data are transmitted in the form of signals to execution bodies (regulators) that automatically change the parameters of the technological process. This is how the command and automatic control of the technological process is executed. Differences appear between the objectives of the two categories of systems (A and B). Those for the management of technological processes have as objectives the improvement of aggregate yield, the monitoring of operational safety, the increase of product quality indicators, the improvement of other technical-economic indicators.

c) Computer systems for research and design activity - they aim to ensure the automation of scientific calculations, computer-aided design and other facilities necessary for specialists in the respective fields.

d) IT systems for the management of special activities (domains) - intended for specific domains of activity: information and documentation, medicine, the legal domain, etc.

Depending on the hierarchical level occupied by the economic system in the organizational structure of society:

a) IT systems for managing the activity at the level of the economic unit - can be broken down into IT subsystems associated with the functions of the economic units: IT for production, financial-accounting IT, commercial IT, IT for human resources, etc.

b) IT systems for managing the activity at the level of organizations with a group structure - IS at the level of autonomous directorates, at the level of some departments, etc. The structure of an IS of this type results from the integration according to systemic principles of the IS related to the component units, the outputs of these IS being taken over by the IS of the management body of the entire organization (Chaudhuri, 2022; Hirouchi, 2022).

c) Territorial IT systems - at the level of administrative-territorial units, serve to substantiate the decisions adopted by the local governing bodies (city, county).

d) IT systems for the management of branches, sub-branches and activities at the level of the national economy - are developed and administered by the ministries, departments or bodies that are tasked by law with methodologically coordinating the respective groups of activities.

e) General functional IT systems - intersect all the branches and activities that take place in the space of the national economy: the financial system, the banking system, the statistical system.

Depending on the major roles they fulfill in an organization:

Information systems fulfill operational, managerial and strategic support roles in businesses and organizations, being able to be grouped into information systems for company functions, operational information systems and managerial information systems.

3. Application of different types of data in information systems

It is important for a manager to understand that IS (Information Systems) directly supports functions operational and managerial aspects of the organization in accounting, finance, human resources, marketing and operational management. For example, marketing managers need information about volume and sales trends, provided by marketing IS (Applications: Sales management, market research and forecasts, promotion and advertising, automation of the activity of sales, Interactive Marketing, Customer Relationship Management – Customer

Relationship Management = CRM-, Production Management). Economic directors need information about financial costs and benefits, provided by financial IS (Applications: Preparation of the income budget and expenses = BVC, Financial planning, Cash management, Investment management).

Managers responsible for production need information to analyze resource needs and labor productivity, provided by manufacturing IS. HR managers need information about entitlements employee salaries and professional development, provided by human resources IS (Applications: Personnel record, Payroll, Improvement of personnel qualification). In conclusion, IS for enterprise functions provides managers with a variety of information for substantiating decisions in the functional areas of business (Gessert 2023; Dayal, 2023).

Operational IT systems process data generated and used in business operations. In the depending on the role they have, there are several categories: processing systems a of transactions - records and processes data resulting from transactions, updates databases of data and produce a variety of documents and reports; process control systems – provides operational decisions that control physical processes; automated systems of services - those that support communications. Computer systems have always been necessary for the processing of data generated and used in business operations. Operational SIs produce a variety of information, but they (the information) do not highlight which information products are the most suitable for managers. For this reason, further processing via computer systems.

Operational IT systems include most transaction processing systems, which have evolved from manual IS to mechanical data processing systems and then to systems of electronic data processing. Transaction processing systems record and processes data resulting from transactions such as sales, purchases and changes of inventory. They can process data created by modifying items in a database file of data (for example the name and address changes of a customer), generating a variety of informational products for internal or external use (for example invoices for customer, paychecks, sales receipts, purchase orders, dividend payments, payments of taxes and financial invoices) and highlighting the databases used by an organization for further processing, through managerial information systems (Coronel 2023; Hirouchi 2022).

An IT system specific to economic applications can access data from databases structured as data warehouses, such as the one in the following example:

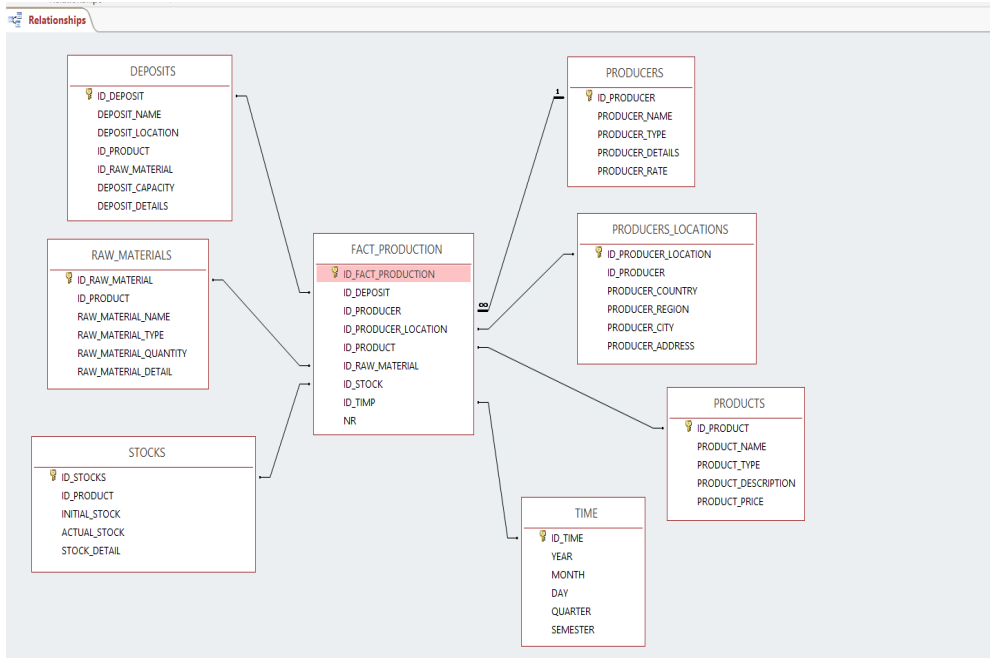


Fig. 1. A database star schema for a production company

The dynamic analysis of the present and future situation is based on solid documentation. A well-founded decision requires internal and external information, expressive indicators that reflect the processes and phenomena of the company's economic and financial activity, determine the limitation of the uncertainty that characterizes the company's behavior in the context. Together with the information, in identifying and choosing the courses of action, an important role is played by the rigor and personal experience of the decision-maker, because in the last instance, decision-making is an attribute of management. In the financial-accounting field, Interactive Decision Support Systems help the analyst establish a diagnosis of the company's present and future based on data extracted from an accounting information source. Considered a computerized documentation system, based on knowledge in the financial-accounting field, it helps the decision-maker to solve problems related to the analysis of the existing patrimonial situation, the conditions of financial balance and profitability, to highlight weak points and strong points, to make forecasts (Paton, 2023; Dayal, 2023).

The analysis is mainly based on the information provided by the Balance Sheet, the Profit and Loss Account and Appendices, supplemented with information on the commercial, technical and human potential, with information highlighting the company's position on the market and the intensity of the competition. In the financial-accounting field there are no unique decision

criteria, the elements of the result being sensitive to a multitude of factors, to assumptions regarding prices, the market, or economic growth. For example, a cost-effective solution from the point of view of general liquidity may be less good from the point of view of the treasury. The advantages of using a star database schema are multiple and can include interactive analyzes created by managers through friendly interfaces, detailed business reports or graphs that can be easy to use for calculating future trends. Such an interactive analysis can be easily performed as in the following example:

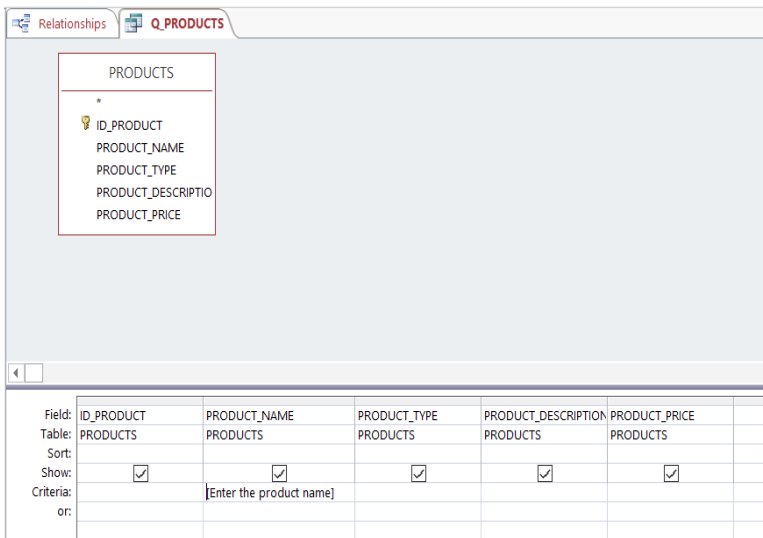


Fig. 2. A query based on products table

Another example of interactive analysis is the following:

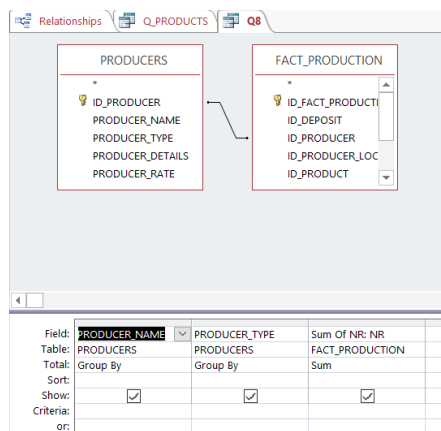


Fig. 3. A query based on producers table and fact_production table

The accounting information is correlated with the specifics of the activity, with the results of exploitation or with the objectives established depending on the context. Thus, the interpretation of financial flows is done in a different way in the phases of expansion, maturity or decline of the company (Chaudhuri, 2022; Gessert, 2023).

The results of the financial analysis are obtained most of the time on mathematical models. They are subordinated to some general objectives, they are useful in formulating general economic policy recommendations. I am looking either to improve the framework necessary for making decisions, or to carry out a preparatory study to decide.

Theoretically there are several models for the same situation. The decision-maker, specialist in financial analysis, remains the last mediator who, interactively and depending on the context, performs calculations within the offered models, changes the representation model if necessary. Success is essentially based on the ability of the decision-maker to foresee events and to anticipate the consequences of their production.

A form used to enter data can be the following:

FACT_PRODUCTION	
ID_DEPOSIT	DEPOSIT 1
ID_PRODUCER	PRODUCER 1
ID_PRODUCER_LOCATIO	1
ID_PRODUCT	PROD 1
ID_RAW_MATERIAL	1
ID_STOCK	1
ID_TIMP	2020
NR	4

Fig. 4. A form used to enter/modify data in the table and fact_production table

A report used by managers may be as follows:

DEPOSIT_NAME	PRODUCER_COUNTRY	DEPOSIT_LOCATION	PRODUCER_ADDRESS	PRODUCT_NAME	PRODUCT_PRICE	RAW_MATERIAL_NAME	First of PRODUCER_NAME	Sum Of ACTUAL_STOCK
DEPOSIT 1								
	COUNTRY 1	LOCATION 1	ADDRESS 1	PROD 1	107	RAW MATERIAL 1	PRODUCER 1	127
Summary for 'DEPOSIT_NAME' = DEPOSIT 1 (1 detail record)								
Sum								127
DEPOSIT 2								
	COUNTRY 2	LOCATION 2	ADDRESS 2	PROD 2	132	RAW MATERIAL 2	PRODUCER 2	179
Summary for 'DEPOSIT_NAME' = DEPOSIT 2 (1 detail record)								
Sum								179
DEPOSIT 3								
	COUNTRY 3	LOCATION 3	ADDRESS 3	PROD 3	154	RAW MATERIAL 3	PRODUCER 3	24
	COUNTRY 4	LOCATION 3	ADDRESS 4	PROD 4	165	RAW MATERIAL 2	PRODUCER 4	24
	COUNTRY 5	LOCATION 3	ADDRESS 5	PROD 5	172	RAW MATERIAL 5	PRODUCER 5	55
Summary for 'DEPOSIT_NAME' = DEPOSIT 3 (3 detail records)								
Sum								103
DEPOSIT 4								
	COUNTRY 4	LOCATION 4	ADDRESS 4	PROD 4	165	RAW MATERIAL 4	PRODUCER 4	48
Summary for 'DEPOSIT_NAME' = DEPOSIT 4 (1 detail record)								
Sum								48
DEPOSIT 5								

Fig. 5. A report used for decision makers based on details of sales

In the general framework of the company’s IT system, Interactive Decision Support Systems are included in the category of management systems. It is based on information from transaction processing systems and assists the managerial process at different decision-making levels. They expand towards the implementation of the decision, the orders resulting from the decomposition of the decisions reaching the level of the operative management system (Dayal, 2023; Hirouchi, 2022). Charts can be used to calculate future trends if time dimension data is also used, such as the following example:

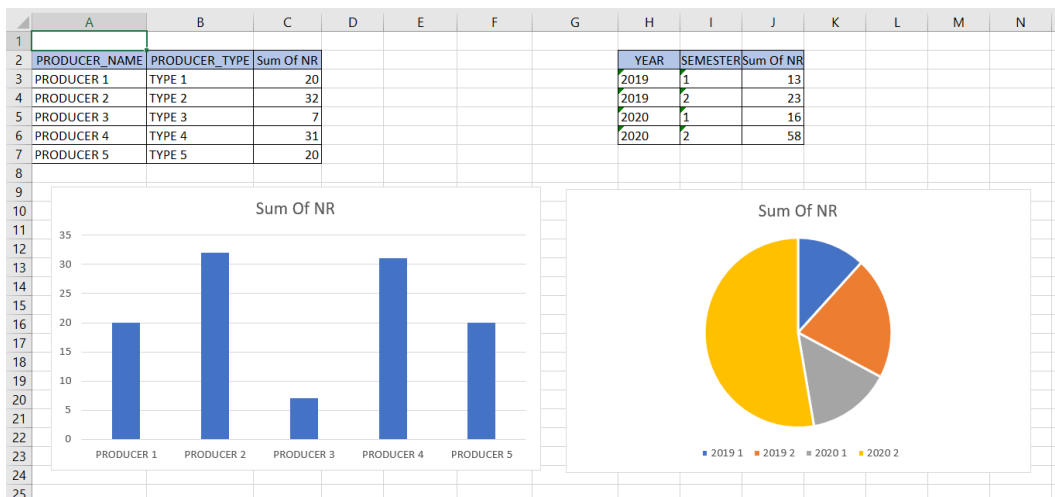


Fig. 6. Charts used to calculate future trends

Used in company management, Information Systems are present in various stages of the decision-making process, at the tactical or strategic level they emphasize the flexible elements, assisting ad hoc requests and analysis.

4. Conclusions

Within them, the management information systems, executive information systems are intended for tactical management, emphasizing quick access to information, providing elements directly related to the management of the company's resources, and support systems for management executive support system are intended for the strategic management of the company, taking more information from the external environment of the company (Chaudhuri, 2022; Paton, 2023). Transactional systems are designed to streamline and automate the processing, record keeping and reporting of transactions. Record current information and maintain database of transaction information. The quantitative and even qualitative increase in the information obtained from the processing of daily transactions did not lead to significant changes in the quality of the decisions made. There are numerous options for data processing, information evaluation, adaptation to changes. The use of information systems that use databases optimizes data storage, but also offers multiple possibilities of using them through queries, reports and graphs, which can help managers in the decision-making process.

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LEGISLATIVE UPDATES AND CROSS-NATIONAL COMPARISONS OF WORK-LIFE BALANCE IN THE EU

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Abstract: *The objective of this paper is to analyze the evolution of legislation on work-life balance in the European Union (EU), from its first initiative adoption in 2019 to its mandatory implementation by the member states in 2022 (or later). Our research begins with an overview of the initial steps taken towards the implementation of such policies since 2017, revealing the concepts and significance of work-life balance in contemporary society, and briefly discussing the historical context of relevant laws and acts that paved the way for the most recent one, the Directive EU 2019/1158 (also known as the work-life balance directive). In this context, we outline the key provisions of the work-life balance Directive and highlight primary studies that have monitored its implementation across EU member states (such as those made by Coface, Deloitte, European Commission, etc.). The paper updates our previous work on this topic regarding the progress of the Directive's implementation in those EU member states where such information was available.*

Keywords: *work-life balance concepts, work-life balance legislation, European Union, human rights*

JEL Classification: *I30, I31, J08, J22, J28*

1. Introduction

In a rapidly changing society, balancing careers, family duties, and personal life presents increasingly significant challenges for employees. In such context there was a need for adopting family-friendly measures and flexible work arrangements in EU in order to facilitate this balancing act. Achieving a work-life balance should include more than just household tasks and family care, but should manage some other life priorities like personal development and/or extracurricular activities either. The proposal for such a directive originated in

2017 (COM/2017/0253) and encompassed several key aspects. These included the introduction of paternity leave, providing a minimum of 10 working days around the time of a child's birth. Additionally, the proposal introduced carers' leave, granting workers who offer personal care or support to a relative or cohabitant 5 days of leave per year. Another significant element was the extension of the existing right to request flexible working arrangements—such as reduced working hours, adaptable schedules, and changes in the place of work—to encompass all working parents of children up to at least 8 years old, as well as all caregivers (Eurostat, 2020). This initiative incorporated also, according to Eurostat (2020), a series of non-legislative measures destined to assist Member States in achieving these objectives. Such measures were referring to: ensuring protection against discrimination and dismissal for parents (including pregnant women and individuals returning from a leave) and caregivers; promote balanced utilization of family-related leaves and flexible working arrangements, with a particular emphasis on achieving gender equity. The benefits of adopting such proposal at the EU level would be an improved equilibrium between professional and private lives for both parents and caregivers. Furthermore, the anticipated increase in women's workforce participation, along with earning more and advancing in their careers, would have brought positive effects on the economy, social inclusion, and the health and happiness of these individuals and their families (Eurostat, 2020). The Directive on Work-Life Balance for Parents and Caregivers (Directive EU 2019/1158) was finally adopted in the EU after two years, in June/2019 and all the EU member states were required to implement it into their own legislation by August 2022. In 2027 Member States have to communicate to the Commission the stage of the Directive implementation necessary for drawing up a report.

2. Literature review. Concepts and importance of work-life balance in modern society

Work-life balance refers to achieving a state where work and personal life coexist harmoniously. It means that usually job duties and responsibilities can be done without personal life neglecting which includes health, family, friends, hobbies, and cultural interests. Work-life balance doesn't necessarily mean giving equal attention to every aspect of life, but rather having the freedom to allocate the time and energy between work and personal life according to each individual preference. There isn't a single, universally agreed-upon definition or way to measure work-life balance in the existing literature. *Kalliath & Brough (2008)* examined six different conceptualizations about work-life balance, including: managing multiple roles, equity across these roles, satisfaction, fulfilling important roles, understanding the relationship between conflicts and

facilitation, and having a sense of control over these roles. They also introduced a new definition: “*Work–life balance is the individual perception that work and non-work activities are compatible and promote growth in accordance with an individual’s current life priorities*”. Work-Life Balance (WLB) as was defined by Kirchmeyer (2000) represent the achievement of fulfilling experiences in the different aspects of life that require various resources like: energy, time and commitment and these resources are spread across all the domains (Khateeb, 2021). Throughout the evolution of the discipline of work-life balance, various theories have been proposed to elucidate this phenomenon (Khateeb, 2021). *Spillover Theory - Pleck (1995)* introduced the concept of spillover, wherein the effects of one’s work role spillover into their family role, and vice versa.

Conflict Theory - Greenhaus and Beutell (1985) formulated the conflict theory, which posits that work and personal life are inherently conflicting in terms of demands on an individual’s time and effort, leading to competition for their attention. *Compensation Theory - Staines (1980)* described the compensation theory, where individuals seek to compensate for deficiencies in one aspect of life (e.g., work or family) by investing more resources in the other aspect. *Enrichment Theory - Powell & Greenhaus (2006)* developed the enrichment theory, which examines processes that connect work to family and family to work. Enrichment occurs when experiences in one role enhance the quality of life in another, or when psychological resources from one role spill over into another. *Facilitation Theory-Frone (2003)* introduced facilitation theory, which explores how engagement in one role can lead to acquiring skills, experiences, and opportunities that make participation in another role easier. *Boundary Theory- Nippert-Eng’s sociological work (1996)*, delves into how individuals assign meaning to their work and home lives, and how they navigate the transition between the two.

Work/Life Border Theory-Clark (2000) proposed the work/life border theory, suggesting that individuals actively manage and negotiate the boundaries between their work and non-work domains to achieve a balance. This theory acknowledges that while “work domain” and “non-work domain” are distinct, they do influence each other. These theories provide valuable perspectives for understanding the complex interplay between work and personal life (Khateeb, 2021). According to other authors (but also according to reality we live), work and family life often blend, and it is not always possible to draw clear boundaries between the two. Family responsibilities may spill to work hours, as much as the work demands might extend to personal time. As a result, trying to maintain a rigid balance between the two spheres might lead to frustration and disappointment. This is why, finding a way to combine the two aspects of life according to personal values and priorities can lead to a more realistic and advantageous approach.

Both work and family are important elements of everybody's life, and can exist together, improving overall well-being and happiness.

3. European Union - Historical development of work-life related policies in the EU

The EU's commitment to work-life balance extends far beyond the adoption of the *Directive on Work-Life Balance for Parents and Careers in 2019*, as it has consistently sought to improve working conditions and prioritize the welfare of its citizens throughout its history (Andrei, 2023). Since the 1970's and 1980's, were adopted the first European directives regarding the protection of workers' health and safety, which had a direct impact on the working environment and hours worked. In 1978, the Council of the European Union passed a resolution on the first Action Programme on Safety and Health at Work in the EU. The Council emphasized the need to monitor workers' health and also considered psychosocial factors, suggesting that adapting work to workers would promote their physical and mental well-being (Castillo, 2016). The Council Directive with improvements in the safety and health of workers at work (89/391/EEC), came into force in 1989 and was fully implemented across all EU member states by 1992.

In the 1990's, was adopted a directive concerning maternity leave, parental leave, and the rights of workers with children, in an attempt to support families and to promote a work-life balance (92/85/EEC). The research paper entitled: "*Maternity and paternity leave in the EU*" published by the European Parliamentary Research Service (EPRS,2022) defines the terms that such directives and/or legislations often used (i) maternity leave which is a leave granted to mothers during the period before and after childbirth; (ii) paternity leave, which is given to fathers or recognized second parents, similar to maternity leave and (iii) parental leave is available to either parent after the maternity or paternity leave period. According to their research paper, maternity rights were set out in the 1992 through Pregnant Workers Directive (92/85/EEC) which comprises measures for improvements in the safety and health at work for pregnant workers and/or for workers who have recently given birth or are breastfeeding. Dir. 92/85/EEC has been changed in current consolidated version on June 2019. In present the final form of this EU legislation sets the minimum period for maternity leave at 14 weeks, with 2 weeks compulsory leave before and/or after confinement and an adequate allowance subject to national legislation (EPRS, 2022). In the 2000's, the EU have also implemented some directives with a focus on gender equality, working conditions and in achievements of a balance between the professional and personal lives of employees. Among them we mention: Dir.2003/88/EC; Dir.2006/54/EC; Dir. 2010/41/EU and Dir.2010/18/EU (Andrei, 2023).

Directive 2010/18/EU of the Council on 8th March 2010, actually implemented a revised framework agreement on parental leave, concluded one year earlier (18th June 2009) The purpose of parental leave was to facilitate the professional and family responsibilities and promote treatment equality between men and women. According to this directive, parental leave was granted for a minimum of four months on non- transferred base Directive 2010/18/EU was repealed with the introduction of Directive EU 2019/1158, mentioned in the current paper's introduction.

Finally, the last and newest one, the Directive EU 2019/1158 represents a continuation of the EU's efforts in maintaining and expanding the rights of workers (and their families) regarding work-life balance. The three main rights provided by the Directive according to COFACE Families Europe (2022) were: paternity leave, parental leave and carers' leave. In more detailed picture the directive improvements were: (i) 10 working days of paternity leave for fathers or equivalent second parents (art. 4) remunerated at least at the level of sick pay (art. 8, rec.30) compared to previous law (2010/18/EU) which had not legal provisions for paternity leave, (ii) at least four months of parental leave per parent, of which 2 (two) months that cannot be transferred between parents (art.5), compared to previous law from 2010, which had just 1(one) month non-transferable between parents, remunerated at adequate level by Member States (art. 8, rec. 31); (iii) at least five working days of leave per year, with additional flexibility on how to allocate them (art. 6) for caregivers with no mentions about remuneration at EU level, (rec.32), compared to previous law (2010/18/EU) which had not legal provisions for caregivers leave; (iv) the right to request flexible working arrangements (flexible work schedules, reduced working hours). Article 9 states that Member States shall take the necessary measures to ensure that workers with children up to at least eight years, and carers, have the right to request flexible working arrangements for caring purposes (COFACE Families Europe, 2022).

4. Implementation of work-life directive in EU member countries

After its adoption in 2019, the Directive's text was published in the Official Journal of the EU in all languages. Member States were granted a period until August 2, 2022, (a span of three years) to integrate the necessary laws, regulations, and administrative measures to align with the directive into their national legislations. However, on September 21, 2022, the Commission took action against 19 Member States for not communicating their transposition measures. Further analysis of countries' replies revealed that 11 of these countries had not fully implemented the Directive. As a result, the Commission was started an infringement procedure to 11 Member States: *Belgium, Czechia,*

Ireland, Greece, Spain, France, Croatia, Cyprus, Luxembourg, Austria, and Slovenia. At that time, these countries were granted an additional two months to address the issues or face potential referral to the European Union's Court of Justice (Andrei, 2023). Several studies aimed at tracking the implementation stage of EU Directive 2019/1158 on work-life balance in EU member states. We will mention the most extensive studies carried out in this direction and we will detail the most recent ones. A first study we mention is one of COFACE Families Europe report about assessment of the EU Work-Life Balance 2019 Directive transposition, named: *"EU Work-life Balance Directive transposition in action: A mixed picture"* (COFACE, 2022). This report presents clear and detailed the findings in matter of Directive implementation for 10 of the EU member states: Belgium, Croatia, Finland, France, Germany, Hungary, Italy, Lithuania, Poland and Spain (a comparative analysis of the Directive EU 2019/1158 transposition). We also mention a more recent study conducted by Deloitte in 2023 (Deloitte, 2023). This study focuses on the implementation of two EC directives (EU Directive 2019/1158) and EU Directive 2019/1152) across 10 EU member countries: *Bulgaria, Croatia, Czech Republic, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia*. Four of these countries are also mentioned in the COFACE study (Croatia, Hungary Lithuania and Poland) providing us with a more current development. Based on Deloitte April 2023 study, it is confirmed that 9 out of the 10 EU countries analyzed (excluding the Czech Republic) have successfully implemented the provisions of EU Directive 2019/1158 concerning Work-Life Balance. Actually, we present the actual stage of Directive implementation (August 2023) following these results and/or most recent data here below in the table 1:

Table 1. Work-Life Balance Directive implementation-August 2023

	Country	EU Directive 2019/1158 implementation stage, 2023	Source
1	Bulgaria	The Bulgarian National Assembly has passed a new law that modifies and adds to the Bulgarian Labour Code. This law was officially published in State Gazette No. 62/05 August 2022 and became effective on August 1, 2022. Changes and additions were also made to the "Ordinance on Working Time, Rest, and Leave," published in State Gazette No. 78/30 September 2022, with the same effective date of August 1, 2022.	Deloitte, 2023. Implementation of the EU Directives on Work-Life Balance and on Transparent and Predictable Working Conditions across Central Europe (Legal report).

2	Croatia	In Croatia, Directive 2019/1158 was incorporated into law through changes to the Maternal and Parental Benefits Act (Official Gazette no. 85/2022) on 1 August, 2022, and the new Maternal and Parental Benefits Act (Official Gazette No. 152/2022) on January 1, 2023. Other significant changes were made through amendments to the Labour Act, effective from January 1, 2023.	Deloitte, 2023. Implementation of the EU Directives on Work-Life Balance and on Transparent and Predictable Working Conditions across Central Europe (Legal report).
3	Czech Republic	The Directive of the European Parliament and of the Council (EU) 2019/1158 on work-life balance and Directive 2019/1152 on transparent and predictable working conditions will change Act No. 262/2006 Coll., Labour Code in 2023 (DLA Piper, 2023). The amendment received the Czech government's approval on April 5, 2023 and is projected to be enforced with a deadline of 1 January, 2024, at the latest (Deloitte, 2023).	DLA Piper, 2023. Expected changes in the Czech Labour Law and Social Security Law Deloitte, 2023. Implementation of the EU Directives on Work-Life Balance and on Transparent and Predictable Working Conditions across Central Europe (Legal report).
4	Hungary	The amendment to the Hungarian Labour Code (Act I of 2012 on the Labour Code), which incorporates the Directive, has been approved by the Hungarian Parliament. This amendment became effective on January 1, 2023.	Deloitte, 2023. Implementation of the EU Directives on Work-Life Balance and on Transparent and Predictable Working Conditions across Central Europe (Legal report).
5	Latvia	Parliament passed amendments to labor law in Latvia on 16 June, 2022. These changes include the incorporation of EU directives like EU 2019/1152 on working conditions, EU 2019/1158 on work-life balance, and certain elements of Directive 2014/67/EU on posted workers, following a formal notice from the European Commission. These amendments became effective on Aug. 1, 2022.	European Commission, 2022. Flash Reports on Labour Law. July 2022. Summary and country reports.
6	Lithuania	On 28 June 2022, the Lithuanian Parliament (Seimas) with Law No. XIV-1189, adopted an amendment to the Labour Code to promulgate nearly 30 provisions of the Code (Registry of Legal Acts, 2022, No. 15178) related to the transposition of various EU directives (Directive 2019/1152 on transparent and predictable working conditions, EU Directive 2019/1158 on work-life balance,	European Commission, 2022. Flash Reports on Labour Law July 2022. Summary and country reports

		and EU Directive 2020/1057 on road transport of mobile workers).	
7	Poland	The amendment to the Labor Code in Poland which supports parents and employees was published in the Journal of Laws on April 4, 2023, and became effective on April 26, 2023.	Deloitte, 2023. Implementation of the EU Directives on Work-Life Balance and on Transparent and Predictable Working Conditions across Central Europe (Legal report).
8	Romania	Emergency Ordinance No. 117/2022, which amends and completes the Law on Paternity Leave No. 210/1999, became effective on August 29, 2022. Law No. 283/2022, amending and completing Law No. 53/2003 on the Labor Code, along with Government Emergency Ordinance No. 57/2019 concerning Administrative Code matters such as carers leave, force majeure leave, and flexible working arrangements, came into effect on October 22, 2022.	Deloitte, 2023. Implementation of the EU Directives on Work-Life Balance and on Transparent and Predictable Working Conditions across Central Europe (Legal report).
9	Slovakia	The Slovak Labour Code now incorporates the Directive through an Amendment of the Labour Code approved by the National Council of the Slovak Republic on 4 October, 2022, and subsequently signed by the President on 21 October, 2022. The updated Labour Code became effective on 1 November 2022.	Deloitte, 2023. Implementation of the EU Directives on Work-Life Balance and on Transparent and Predictable Working Conditions across Central Europe (Legal report).
10	Slovenia	The Act Amending Parental Protection and Family Benefits Act (Official Gazette of the Republic of Slovenia No 97/01) has been adopted to implement in Slovenia the provisions of EU Directive 2019/1152. The Act was adopted on 24 November 2022, and applied from 1 April 2023.	Deloitte, 2023. Implementation of the EU Directives on Work-Life Balance and on Transparent and Predictable Working Conditions across Central Europe (Legal report).
11	Belgium	Through regulations dated 7 October, 2022, Belgium has successfully incorporated the European directive on transparent and predictable working conditions (Directive (EU) 2019/1152), while also partly integrating the European directive on work-life balance (Directive (EU) 2019/1158). The transposition of Directive (EU) No. 2019/1158 on work-life balance for parents and carers into Belgian law brings some changes to the types of family-	Crowell, October 2022; New Belgian Labor and Employment Laws on Work-Life Balance and Transparent and Predictable Working Conditions.

		-friendly leave and introduces new possibilities for workers to more flexibly combine their work with caring activities.	
12	Finland	The implementation of the Directive in Finland involved modifying various labor and parental laws (Lexology, 2023). This includes amendments to the Employment Contracts Act 55/2001 regarding family leaves, effective from 1 August 2022, and a partial revision of the Non-Discrimination Act 21/2004, which came into effect in June 2023 (Karänen & Vinnari, 2023).	Lexology, 2023. The Work-life Balance Directive: Update on implementation. Karänen & Vinnari, 2023. Finland: Employment Law Update: Wrapping Up 2022 And Taking a Sneak Peek At 2023.
13	France	France has incorporated the provisions of the EU Directive on work-life balance for parents and caregivers (2019/1158) by means of Law 2023/171 (Koenig, 2023).	Marine Koenig, 2023. New French Law Incorporates EU Directives on Transparent and Predictable Working Conditions and on Work-Life Balance. Legifrance, 2023. Law 2023/171 of March 9, 2023 adapting various statutory provisions to EU Law.
14	Germany	On 1 December, 2022, the German Parliament approved the adoption of the proposed law (Document 20/3447 dated September 19, 2022) to align with EU Directive 2019/1158. The core aspects of the EU Directive are already comprehensively addressed within existing German legislation. As a result, the implementation of the directive within Germany doesn't introduce substantial alterations. The proposed law introduces modifications to the <i>Federal Parental Allowance and Parental Leave Act</i> , the <i>Caregiver Leave Act</i> , the <i>Family Care Leave Act</i> , and the <i>General Equal Treatment Act</i> . These changes particularly aim to safeguard employees seeking parental or caregiving leave within small enterprises. The introduction of paternity leave in 2024 remains uncertain.	Simmons & Simmons, 2022. German Parliament decides against paternity leave for now.
15	Italy	The Italian legislation has integrated the EU Directive 2019/1158 concerning work-life balance for parents and caregivers through the enactment of Legislative Decree No. 105 on June 30, 2022. This decree officially took effect on August 13, 2022.	L&E Global, 2023. Italy: 2023, Looking ahead.

16	Spain	The implementation of EU Directives 2019/1152 and 2019/1158 in Spain took place via the issuance of Royal Decree-law 5/2023 on June 28, 2023. This decree, which revises several existing labor and employment laws, was officially published in the Official State Journal of Spain on June 29, 2023, thus becoming effective.	Global Compliance Desk – Spain, 2023. Spain: Introduces New Measures for Work-life Balance in accordance with EU Directives
17	Austria	Austria already has for longer time a legislation in place that provides conditions equivalent to, or more generous than, those in the EU Directive 2019/1158 (Amendment to Paternity Leave Act was approved by Austrian Parliament, since 2 July 2019) (Lexology, 2022). Due to its highly supportive policies, Austria provides more extensive parental leave options, as compared to many other countries, here including EU member countries. Parents can access numerous government benefits in order to achieve work-life-balance in Austria as: cash benefits for each child, child tax credits, and child-raising allowances (Expatica), 2023)	Lexology, 2022. The Work-life Balance Directive: Update on implementation. Bhaumik, G., (Expatica), 2023. Work-life balance in Austria
18	Cyprus	After being published in the Official Gazette on December 16, 2022, the Law No.216(I)/2022 concerning Leave (Paternity, Parental, Carer, Force Majeure) and Flexible Working Arrangements for Work-Life Balance has officially taken effect in Cyprus.	Elias Neocleous & Co LLC, 2023. Cyprus Introduces New Work-life Balance Legislation Providing Additional Rights for Working Parents and Caregivers.
19	Denmark	The Danish Parliament approved the changes to the parental leave act on March 3, 2022. Specific regulations are in place for self-employed parents. Furthermore, starting from January 1, 2024, updated regulations for single parents will be implemented. These changes allow a portion of the leave to be transferred to close family members like grandparents or siblings. Additionally, as of 1 January, 2024, improvements will be seen in parental leave options for LGBT+ families. Legal parents will have the ability to transfer specific weeks of the leave to the child's "social parents."	NJORD, 2022. New rules on parental leave in Denmark.

20	Estonia	<p>The Estonian law incorporated the Directive from 1 August, 2022, by modifying the Employment Contracts Act (Lexology, 2023).</p> <p>This implementation also brought about changes in the Public Service Act, the Act governing Working Conditions of Posted Employees in Estonia, and the Occupational Health and Safety Act (Fondia, 2022)</p>	<p>Lexology, 2023. The Work-life Balance Directive: Update on implementation.</p> <p>Fondia, 2022. Several amendments to the Estonian Employment Contracts.</p>
21	Greece	<p>In Greece, the implementation of Directive (EU)2019/1158 took place through the enactment of Law 4808/2021, which was published in Government Gazette A' 101 on June 19, 2021. This law introduces significant reforms to individual employment relationships, in alignment with ILO Conventions 190 and 187.</p>	<p>Industrial Relations and Labour Law, 2021.</p> <p>Greece: Greek Law 4808/2021 - Major reforms in employment legislation (newsletter)</p>
22	Ireland	<p>In Ireland, the <i>Work Life Balance and Miscellaneous Provisions Act (Act 8 of 2023)</i> is currently being introduced, and specific aspects of this new law will take effect from July 2023 onwards.</p>	<p>Ruth Doris, 2023. What is the Work Life Balance and Miscellaneous Provisions Act?</p>
23	Luxembourg	<p>Two legislative proposals, known as Bill 8016 and Bill 8017, were officially introduced on 2 June 2022, by Luxembourg's Minister of Labour and the Minister of Family Affairs. Bill 8016 introduces two new types of leave, aimed at improving the balance between work and personal life for employees. Meanwhile, Bill 8017 extends leave entitlement to the second equivalent parent in a same-sex couple following the birth of a child. This expansion widens eligibility, which previously only applied to the father in heterosexual couples.</p>	<p>Hamma, M., 2023 (Delano). Three new types of leave introduced,</p>
24	Malta	<p>By means of Legal Notice 201 of 2022, the Work-Life Balance for Parents and Carers Regulations have been established in Malta, effectively implementing the EU Directive 2019/1158 on Work-Life Balance for parents and carers and entered into force on August 2, 2022.</p>	<p>GTG, 2022. Work-Life Balance for Parents and Carers</p>

25	Netherlands	In the Netherlands, the Directive has been put into effect through the enactment of the <i>Paid Parental Leave Act</i> , which became operative on August 2nd, 2022.	Toss, 2022. New Paid Parental Leave Act as of August 2, 2022.
26	Portugal	On 3 April 2023, Law No. 13/2023 was published in the Official Gazette, introducing changes to Portugal's Labor Code, Law No. 105/2009 (Labor Code Regulation), Decree-Law No. 66/2011, and the Social Security Contributions Code.	Garrigues, 2023. Decent Work Agenda in Portugal: Main changes to labor legislation come into force on May 1, 2023
27	Sweden	Sweden's <i>Parental Leave Act</i> and the <i>Act on the Right to Absence for Urgent Family Reasons</i> came into effect on August 2nd, 2022, while the regulations outlined in the <i>Care for Related Persons Act</i> had become effective starting from October 1st, 2022.	Clementson I., (Azets), 2022. Work-life balance for parents and carers

Source: extracted from various sources from each country (last column)

5. Conclusions

In the European Union, the work-life balance improved significantly as a result of the Work-Life Balance Directive's adoption (EU/2019/1158). The directive derives from the need for employees (especially parents and carers) to improve the balance between their professional and personal responsibilities. Its evolution derived from a good understanding of the fact that workers are not only productive contributors to the economy, but also have private lives, caring for children or other members of their families (Andrei, 2023). Analysis of the historical context of work-life balance policies demonstrated that these were not isolated efforts, but rather part of a large and complex one made by all EU countries in order to prioritize the development of its citizen's lives. The Work-Life Balance Directive (EU/2019/1158) mainly focuses on paternity leave, parental leave, and carers' leave, aiming to comprehensively promote a more supportive work environment. The inclusion of a 10 (ten) day paternity leave for fathers or equivalent second parents (Article 4), complemented by a remuneration framework set at a minimum sick pay level (Article 8, recommendation 30), marks a noteworthy departure from the absence of paternity leave provisions in the previous law (2010/18/EU). Furthermore, the Directive ensures that each parent is entitled to at least 4 (four) months of parental leave, with 2 (two) months being exclusively non-transferable between parents (Article 5). As compared to the previous law of 2010 (2010/18/EU), through this extension of parental leave, (EU/2019/1158) now it is legally recognized the importance of family time providing a foundation for a healthier work-life

balance. The requirement for remuneration at a suitable level, determined by Member States (Article 8, recommendation 31), adds a critical dimension to ensuring the feasibility of such leaves. Additionally, the Directive introduces a minimum of five working days of leave per year for caregivers, coupled with enhanced flexibility in leave allocation (Article 6). Although specific remuneration details are absent at the EU level (Recommendation 32), this provision marks a significant leap from the previous law (2010/18/EU), which lacked legal provisions for caregiver leave. The Directive also refers to the right to request flexible working arrangements, such as more flexible working hours and/or a reduced working schedule underlining how the nature of work is constantly changing. Article 9 emphasizes that Member States should have the duty to establish measures to give workers with children up to eight years of age, as well as carers, the ability to seek flexible working arrangements (COFACE Families Europe, 2022). There is a mixed picture of progress and challenges regarding the implementation of work-life directive by member states. Austria already has the corresponding legislation in place that provides conditions equivalent to, or more generous than the provisions of the EU Directive 2019/1158, while on the opposite some other countries have faced obstacles and complexities in incorporating them into their national law. In our paper, we see the studies carried out by entities such as COFACE, Deloitte, European Commission and some legal agencies or laws sites from each EU country which we hope to shed light on the real impact of the Directive's implementation. Positive outcomes came from countries that have effectively adopted the Directive regarding the overpass of gender inequality, improved well-being, and a more engaged and productive workforce. But this directive's journey keeps far from complete. Its impact depends on continued efforts of member states to refine and adapt it to workers' evolving needs.

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YOUTH AND THE LABOUR MARKET IN ROMANIAN RURAL AREAS

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Abstract: *The issue of employment among young people, in general, and especially in rural areas, has become increasingly active at the beginning of the 21st century on national and regional development agendas. The challenge of employment among young people in rural areas has its own dimensions and is present in all rural areas, regardless of their stage of socio-economic development. The level of economic development in rural areas, lack of employment opportunities, low level of education and training, declining interest and motivation of young people to engage in agricultural activities, are just some of the factors that generate pressure on the labor market for young people in rural areas. In addition, they must enter a volatile labor market, in the process of structural change under the impact of changes caused by digitalization and intensive automation of all sectors of activity. The paper presents a synthesis of the particularities of the labor market of young people in rural Romania.*

Keywords: *youth, rural area, employment, unemployment, vulnerabilities*

JEL Classification: *J21, J24, J43, P25*

1. Introduction

One of the most important and complex economic, social, political, cultural, moral, ecological, etc. subjects of our country is the one related to rural issues. In the current conjuncture, the rural area exceeds the field of agricultural activities, it is both the place where the agricultural population works and lives, as well as the place where certain industrial and commercial activities

are carried out and which tends to become a place of residence and recreation for the population.

The weaker consolidation of relations on the rural labor market, the lack of employment opportunities in this environment causes a reduced flexibility of this market and, therefore, an increase in the number of unemployed, especially among young people.

The situation of young people on the labor market represents a major challenge both in rural and urban areas, being a major challenge for local administrations and the Government.

2. Stage of knowledge of the problem

In the context of the increased polarization of jobs, but also of the increased economic and social uncertainty as a result of the economic-financial crisis of 2008, but especially of the current economic-social crisis, they find themselves in a position which makes them extremely sensitive to economic fluctuations.

Among the causes that analysts, as well as young Romanians themselves, identify as obstacles to the insertion of young people from rural areas on the labor market, the following can be mentioned:

- i) lack of jobs at the local level;
- ii) specific obstacles to entry, often resulting from lack of experience;
- iii) the high level of poverty, a phenomenon that particularly affects the young population;
- iv) the level of professional qualification of rural youth is often considered inadequate to market requirements;
- v) lack of counseling for career and in more general terms, for life, for gaining personal autonomy (young people are not prepared to evaluate, find a solution and act effectively in a risky situation, let alone in a situation of socio-professional failure);
- vi) access to information about jobs available especially for young people from rural areas (most young people turn to relatives, friends or acquaintances to find a job);
- vii) a marked gender difference in occupations and fields of activity (young people are predominantly present in construction and industry, while young women are mostly employed in commerce, education, health and social assistance).

The analysis of the youth labor market from the perspective of its main characteristics highlights the fact that, on a segmented labor market, they are included in a niche that suffers from even greater segmentation and is subject to inherent rigidities.

In the specialized literature, a series of studies have been carried out in order to identify the main problems and opportunities regarding the employment, employability and entrepreneurship of young people in rural areas. The main obstacle in obtaining a job is considered by some authors to be the lack of employment opportunities in the locality (Rural economic development through the revitalization of popular traditions and the exploitation of non-agricultural economic potential), but also the lack of information among young people about employment opportunities in the area where I live.

A higher share of unemployed young people from rural areas in total, which, combined with their lower share in an aging rural population, also results in an increased rate of inactivity. Supporting the mobility of young people with the aim of increasing interest in gainful activities, improving professional skills and increasing confidence in one's own strength was achieved through various Projects financed from the European Social Fund through the Sectoral Operational Program Human Resources Development 2007-2013, but also 2014-2021, 2022-2027.

3. Material and method

To achieve the objectives proposed in this paper, a combination of quantitative and qualitative methods and various data sources was used to capture the particularities of the youth labor market in rural areas. The methodology used aimed to identify the challenges of the labor market in the current conjuncture and carry out an analysis of the dynamics and structural changes of the labor market. Also, factorial analysis was used to identify the determining factors of employment among young people from rural areas on the labor market.

Data related to the labor market in Romania published in the Annual Reports of the National Agency for Employment, the National Institute of Statistics of Romania (TEMPO-Online database) were used for the analyses, studies and statistics on the evolution of employment in rural areas carried out by national and international organizations, specialized works published in the country and abroad, Reports and studies of the Ministry of Agriculture and Development Rural.

4. Results and discussion

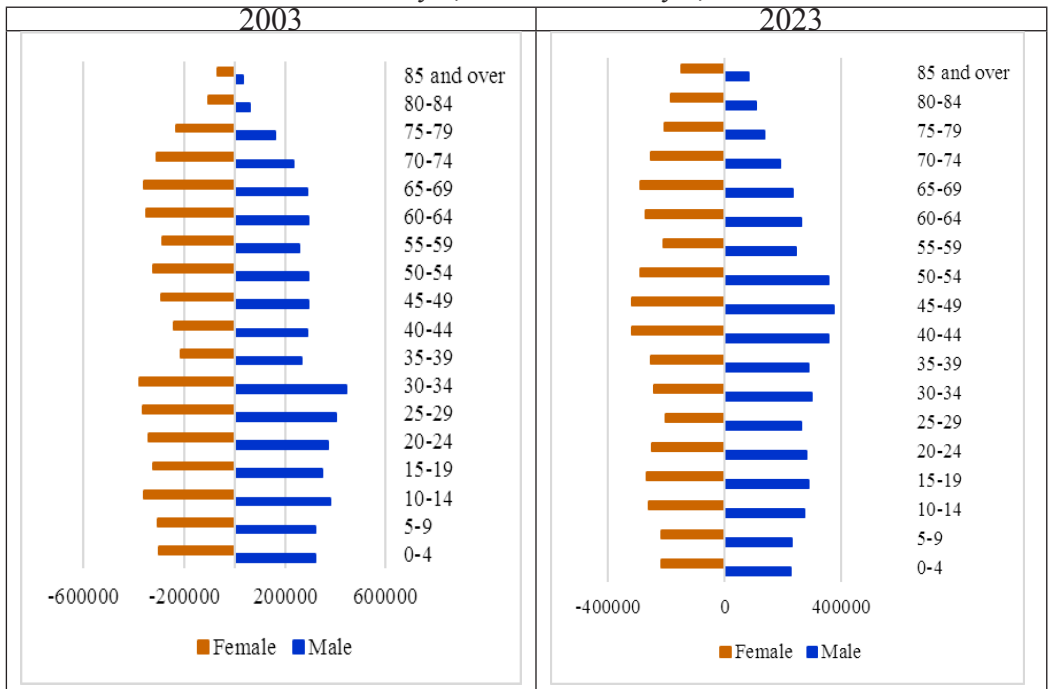
The transformation process of the Romanian village started in the 90s and continued in the first two decades of the 21st century, which led to the modification of the specifics of rural localities, the demographic, occupational and value coordinates of the population in these areas.

Romania is the seventh largest country in the European Union, with a rural area that almost covers 87% of the total surface of the country and 47.8% of the population, of which 19.6% are employed in agriculture, in 2022 agriculture had a share of GDP of only 4.5% (TEMPO-online database - INS).

With a rural population of 9.11 million people on January 1, 2023 (TEMPO-online database - INS), it is the state with the highest share of the rural population in the European Union, followed by Poland and Bulgaria (Eurostat statistics). At the Romanian rural level, there is a phenomenon of an accentuated aging of the agricultural workforce: of the total population employed in agriculture in 2022, 15.6% were over 65 years old, and 30.5% over 45 years old (TEMPO-online database – INS).

The analysis of the age pyramid of the rural population (Figure 1) reveals major changes in the age structure of the population in the last two decades. In the conditions in which the birth rate will continue to decrease, and the number of young people from rural areas who migrate abroad or to the urban area will continue to increase, then an inverted demographic pyramid will be recorded, which is based on the representation of young generations, and at its peak the reunion of cohorts belonging to the third and fourth ages.

Figure 1. Age pyramid for the rural population, January 1, 2003 and January 1, 2023



Source: Author's work based on TEMPO-online data - National Institute of Statistics, www.insse.ro

From the analysis of the statistical data regarding the evolution of the age structure of the rural population, a significant reduction in the share of the young population between the ages of 0 and 24 emerges: from 33.1% in 2003, to 26.8% in 2023, simultaneously with the increase by almost 3.7 percent, of the share of the population over 65 years old (from 18.1% in 2003, to 21.8% in 2020). In the first two decades of the 3rd millennium, Romanian agriculture presents itself in its vast majority as a subsistence agriculture. At the national level, in 2022, only 12.3% of farmers were employees and 0.7% were employers, while 54.8% were self-employed and 35.8% were unpaid family workers (TEMPO-online database – INS), weights that varied insignificantly in 2022.

From the point of view of structural indicators, the Romanian rural environment is characterized by the very high share of agricultural occupation of the population. This occupational category registered a downward trend among young people, but continues to be the main employment sector for the population of this area. In the self-employed and unpaid family worker categories, according to INS statistics (TEMPO-online database - INS), there are 190.7 thousand young people aged between 15-24 years and 134.2 thousand young people in the 25-34 age category in 2022. In the two age categories, 142.1 thousand people are employed, respectively 464.8 thousand young people. Only a small part of the young people who work in rural areas have the status of self-employed (52.57 thousand people from the 15-24 age segment and 169.4 thousand people between the age of 25-34 years) and a much smaller part of these are employers (only 5.242 thousand people aged between 25-34). In this context, it can be said that Romanian agriculture continues to be strongly dominated by subsistence family holdings, with agricultural enterprises constituting a minority whose development is at least unlikely in the near future.

Another phenomenon faced by rural areas is internal migration, but especially international migration. Regarding international migration, the regions that had the largest share in the total number of permanent emigrants, in the last two decades, were: Bucharest - Ilfov Region (19.8%), North - East (16.4%), Center (16.2%), West (13.6%) and North-West (13.4%). The people with the greatest willingness to migrate are usually the young, from the working population, who migrate either abroad or to urban areas in search of better jobs and a more attractive social life.

5. Young people and the rural labor market

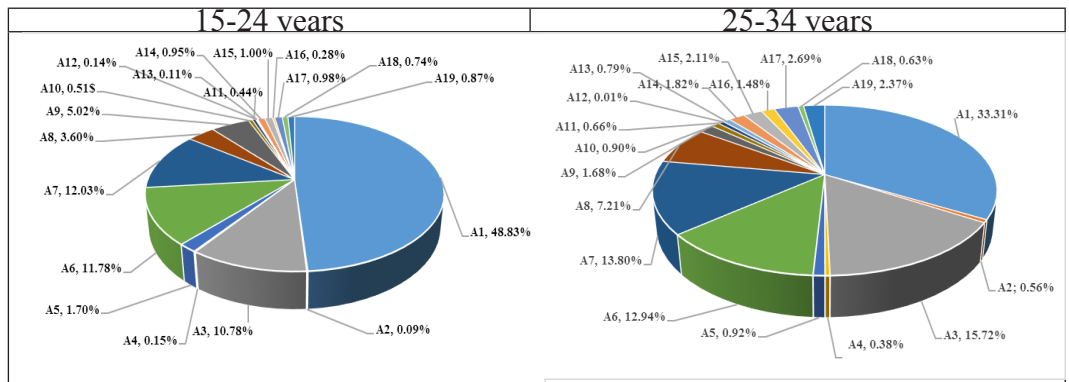
The insertion of young people in the rural labor market or their decision to continue their studies (possibly combined with part-time work) depends on a series of economic and social factors, the financial situation of the young person, the support that parents or other members of the I can offer it to the

family, due to the availability of public funds for studies, for the duration of the transition from school to work; the expansion of the service sector (which requires more qualified labor); the demographic processes that determine the structure of the population; the decrease in the interest and motivation of the young population to engage in agricultural activities.

In rural areas, on January 1, 2023, there were 2.093 million young people aged between 15-35. In the period 2003-2023, the evolution of the number of young people from rural areas had a downward trend, in 2023, they were 876.3 thousand people less than in 2003 (TEMPO-online database).

The analysis of statistical data on employment in various economic activities highlights the fact that young people aged between 15 and 24 years, respectively 25-34 years old from rural areas, in 2022, the trend of previous years was continued, being trained in other activities than those related to agriculture, such as the manufacturing industry (10.78%, respectively 15.78%), wholesale and retail trade; repair of motor vehicles and motorcycles (12.03%, respectively 13.8%), Construction (11.78%, respectively 12.94%) (Figure 2).

Figure 2. The share of young people employed in economic activities in rural areas in 2022



Source: Author's work based on TEMPO-online data - National Institute of Statistics, www.insse.ro

where:

	Activities of the national economy		Activities of the national economy
A1	Agriculture, forestry, fish farming	A11	Financial intermediations and assurance
A2	Mining and quarrying	A12	Real estate transaction
A3	Manufacturing	A13	Professional, scientific and technical activities

	<i>Activities of the national economy</i>		<i>Activities of the national economy</i>
A4	Production and distribution of electric and thermal energy, gas and warm water and conditioning air	A14	Activities of administrative and support service
A5	Water distribution; salubrity, managing of waste, decontaminate activities	A15	Public administration and defence
A6	Constructions	A16	Education
A7	Trade	A17	Health and social work
A8	Transports and storage	A18	Cultural and recreative entertainment activities
A9	Hotels and restaurants	A19	Other service activities, staff and social
A10	Informations and communications		

Statistical data for Romania regarding the training level of young people from rural and urban areas highlight significant differences, the share of young people with lower levels of education being much higher in rural areas. Added to these is the reduction of the gross rate of schooling in rural areas, as well as a hidden form of school dropout when students come to school only a few times a month (these cases not being documented in official statistics).

The weaker consolidation of the relations on the rural labor market, the lack of employment opportunities in this environment causes a reduced flexibility of this market and, therefore, an increase in the number of unemployed. In rural areas, the unemployment rate values were lower than the national average for young people aged 15-24, in the period 2015-2022.

The analysis of statistical data highlights the fact that, for young people in the age segments 25-29 years and 30-34 years, the chances of being enrolled in the ranks of the employed population increase extremely much. The unemployment rate for these two age categories among young people from rural areas has only rarely exceeded 10% in the last five years.

Also, in the rural area, there are significant differences in unemployment by gender, the unemployment rate among young men being higher than that of young women, regardless of the age group analyzed and it is dependent on the level of training (the higher the level of education reduced, the higher the number of young unemployed).

The analysis of the evolution of the labor market indicators for young people from the rural environment indicates the complexity of the problems that affect the 2.093 million young people aged between 15 and 34 whose communities need to overcome the barriers related to education, professional

training and the labor market work, at the same time having to face the challenge of the aging population phenomenon.

6. Conclusions

The important structural changes and essential mutations that have taken place in the last decades in Romania have deeply affected the state of the Romanian countryside. In recent years, both at the national and rural levels, the aging process of Romania's population has intensified. The official statistical data indicate that, in 2022, young people represented 26.8% of the population in the rural environment (being lower in the case of the rural environment compared to the urban one), respectively 2.093 million people.

At the level of the Romanian countryside, depending on the level of education, gender, age and ethnicity, the existence of certain categories of vulnerable young people on the labor market is noted, namely:

- young people without qualifications, who have not graduated from a higher secondary education institution, dropping out of school at a certain time;
- young people between the ages of 19-25, most often recent graduates, without professional experience, or new entrants to the labor market;
- women who represent the vast majority of inactive young people.

Despite Romania's agricultural potential, only approximately 5.6% of young people have income from work in agriculture. In the rural environment, there is a strong relationship between certain economic activities and the gender structure of young people: men work predominantly in construction and industry, while women are the majority in trade, education, health and social assistance. Not infrequently, young people are employed as skilled, unskilled and service and trade workers.

As a result of a relatively low level of education and professional training of young people from rural areas, many employers believe that the skills are not inadequate to the market requirements.

A lower level of education makes the unemployment rate in rural areas higher. Even if at the national level, as a result of the health and economic crisis, the unemployment rate increased in 2022, still, young people from rural areas recorded higher values of this labor market indicator, especially those with a low level of training. Differences in the unemployment rate were also reported between young men and women: unemployment among young people is almost double that of young women.

A high level of unemployment, combined with other socio-economic factors determined by the health and economic crisis can lead to the emergence of a series of social and economic problems that can affect both the economic development and the social development of rural communities.

Over time, a series of laws were formulated and promulgated for young people in general (Law 350/2006; Law 76/2002; Law 279/2005; Law 333/2006) and for those from rural areas in particular (Law 646/2002), or strategies in the field of youth policy, lifelong learning in order to reduce school dropout (Education and Vocational Training Strategy in Romania for the period 2016-2022; National Lifelong Learning Strategy 2015-2022; National Strategy in the field of youth policy for the period 2015–2022; Strategy for the Reduction of Early School Leaving in Romania), increasing the degree of insertion of young people into the labor market.

However, young people from the Romanian countryside continue to be a vulnerable group on the labor market. In this context, the young rural population is faced with the situation either to accept a job for a modest income, or to choose the path of migration to the urban environment in order to find a more attractive and better-paid job, or to go abroad.

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ANALYSIS FINANCIAL AND ECONOMIC DATA USING JOINT TIME-FREQUENCY DISTRIBUTIONS

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Abstract: *Analysis of economic/financial time series in the frequency domain is relative underexplored area of the literature, particularly when the statistical properties of a time series are time-varying (evolving). In this case, the spectral content of the series varies as time passes, making conventional Fourier theory inadequate to fully describe the cyclic characteristics of the series. Time-Frequency Conjunction Representation techniques (TFR) overcome this problem to the best of their ability analysing a given function of time (continuous or discrete) in the time domain and in frequency domain simultaneously.*

Keywords: *JTFA, discrete-time discrete-frequency, time series*

JEL Classification : *C23, C26, C38, C55, C81, C87*

1. Introduction

Time varying spectra is one of the most primitive sensations we experience since we are surrounded by light of changing color, by sounds of varying pitch and by many other phenomena whose spectral content vary with respect to time. With time-frequency signal analysis tools one can study and analyze these signals and identify the temporal localization of the signal's spectral components (Fig.1). In particular, the values of the time-frequency representation of the signal provide an indication of the specific times at which the spectral components of the signal are observed.

This is of special importance since the frequency contents of the majority signals encountered in our everyday life change over time, for example, biomedical signals, power signals, speech signals, stock indexes time series, and seismic signals. This fact is fostering the implementation of time frequency signal analysis tools in many important scientific and engineering applications, such power line signal analysis, SAR (Synthetic Aperture Radar), spread spectrum signal detection and the analysis of FM signals such as chirp signals (Fig. 3). This paper discusses the design, development and implementation of a discrete-time discrete-frequency (DTDF) environment for signal analysis using time-frequency representations. The DTDF environment makes a unified characterization of some well-known time-frequency signal analysis representations, such as the discrete ambiguity function (DAF), the Wigner Distribution (WD), the short-time Fourier transform (STFT) and the discrete wavelet transform (DWT). The DAF is a time-frequency representation that is broadly used in radar and sonar applications. The WD is widely used for signal detection and parameter estimation. The STFT is widely used in applications such as speech recognition and biological signals. A relatively new emerging tool is the discrete wavelet transform that is frequently used in applications such as transient signal analysis and image compression.

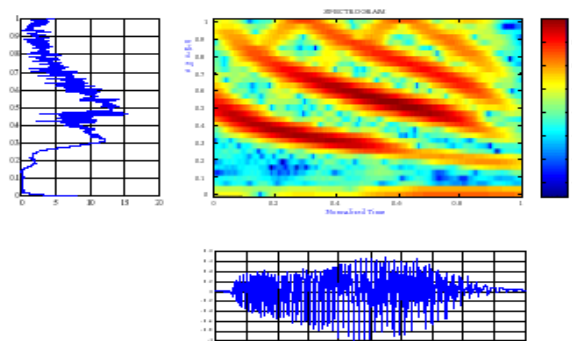


Fig. 1. Graphical representation of a time-frequency signal

This paper is organized as follows. Section 2 will delve into Time-Frequency Representation. Section 3 explains the mathematical representation of the DAF, the WD, the STFT and the DWT. In section 4 we present the computational environment. Section 5 then presents and discusses some results in applications such as STFT. Finally, some conclusions are discussed.

2. Time-Frequency Representation

The Fourier transform has been the most common tool to study a signal's frequency properties. It establishes in conjunction with the inverse Fourier

transform a one-to-one relationship between the time domain and the frequency domain or spectrum space of the signal, which constitute two alternative ways of looking at a signal. Although the Fourier transform (Fig 4) allows a passage from one domain to the other, it does not allow for a simultaneous combination of the two domains.

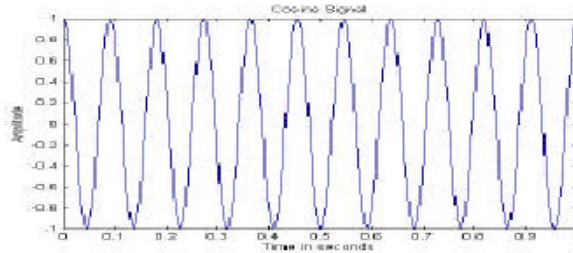


Fig. 2. Cosine: a single tone signal, its spectral characteristics does not vary with time

This presents a problem if we are interested in studying the frequency components of signals which are transient, or their spectral content vary as a function of time, e.g., economic data and speech signals.

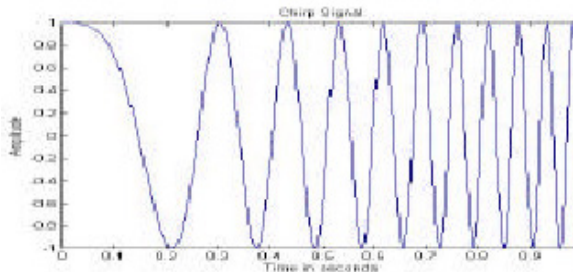


Fig. 3. Linear chirp signal (a band of frequencies), its spectral characteristics do vary with time.

Because of the need to explain such signals, the field of time-frequency signal analysis arose. Its main aim is to develop the physical and mathematical ideas needed to understand what a time-varying spectrum is and to use these methods for practical problems (Fig. 5). The tools already exist individually. It then emerges an imperative need of an environment that can create a uniform characterization of these tools for signal analysis in different engineering applications.

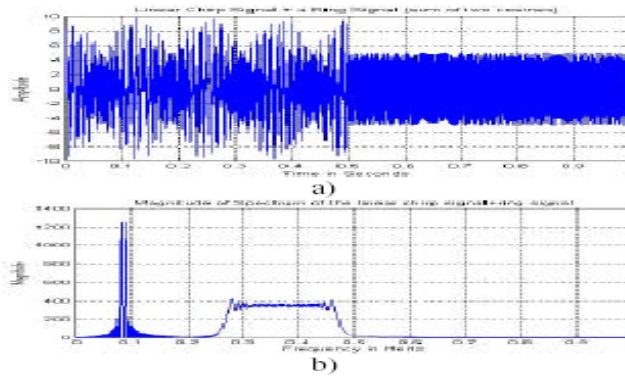


Fig. 4. A time-frequency signal: linear chirp signal + ring signal (sum of two cosines). a) Its graphical representation in time. b) Its Fourier transform

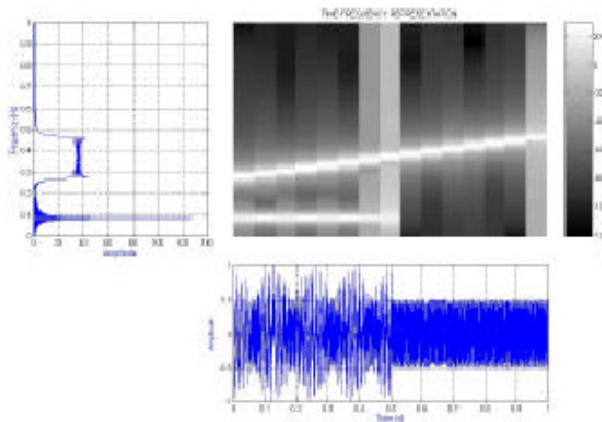


Fig. 5. Time-frequency (STFT) representation

Within time-frequency tools, the discrete ambiguity function, the short-time Fourier transform, the discrete Wigner distribution (Dumitrescu et al., 2021) and the discrete wavelet transform seem to possess properties that can be very significant for their application to important problems encountered in time-frequency signal analysis. For this reason, we considered it a practical decision to concentrate in these four tools. We proceed to describe these tools in more detail (Dumitrescu, Minea, and Ciotarnea, 2019).

3. Ambiguity Function (DAF)

The DAF is a time-frequency representation that has as its objective to extract parameters such as frequency shift and time delay from a specific signal

(parameter estimation), and is frequently used for signal estimation and Doppler effects. It is defined as follows:

$$A_{x,y}[k, m] = \sum_{n=0}^{N-1} x[n]y^*[n+m]W_N^{kn} \quad (1)$$

where $W_N = e^{-j\frac{2\pi}{N}}$, $j = \sqrt{-1}$, x is the transmitted signal, k is the frequency shift, y is the received signal, and m is the time delay. Also, $*$ denotes complex conjugation.

3.1. Discrete Wigner Distribution (WD)

The WD was first introduced in the field of physics. It is defined (Cohen, 1989; Oehlmann, and Brie, 2021) by:

$$W_{N,y}[m, k] = \frac{1}{2N} \sum_{n=0}^{N-1} x[n]y^*[m-n]W_{2N}^{k(2n-m)}, \quad (2)$$

where $W_N = e^{-j\frac{2\pi}{N}}$, $j = \sqrt{-1}$, x is the transmitted signal, k is the frequency shift, y is the received signal, and m is the time delay. Also, $*$ denotes complex conjugation.

3.2. Short-Time Fourier Transform (STFT)

The STFT is a time-frequency tool that consists of a Fourier transform with a sliding time window. The time localization of frequency components is obtained by suitably pre-windowing the input signal. The STFT is:

$$S_x[n, k] = \sum_{m=0}^{M-1} x[m]w[m-n]W_M^{km}, \quad (3)$$

where $W_N = e^{-j\frac{2\pi}{N}}$, $j = \sqrt{-1}$, x is the input signal, w is the analysis window, k is the frequency offset, and m is the time delay.

3.3. Discrete Wavelet Transform (DWT)

It is defined (Cohen, 2022) as the sum over all the time of the signal multiplied by scaled, shifted versions of the wavelet function g . Given a finite energy signal $x(t)$ and a normalized sampling period, $T_s = 1$ we can present a discrete

wavelet analysis of the sampled sequence $x[n] = x(t)|_{t=nT_s}$, $n \in Z$, as follows:

$$c[s, b] = c[l, k] = \sum_{n=0}^{N-1} x[n] g_{l,k}[n] , \quad (4)$$

where $s = 2^l, b = k2^l, l, k \in Z$ and $g_{l,k}[n] = 2^{-\frac{l}{2}} g[2^{-l}n - k]$

The discrete synthesis operation can be presented by:

$$x(t) = \sum_{l \in Z} \sum_{k \in Z} c[l, k] \Psi_{l,k}(t) , \quad (5)$$

where $\Psi_{l,k}(t) = 2^{-\frac{l}{2}} \Psi(2^{-l}t - k), l, k \in Z$.

4. Computational environment

The main objective of the environment presented in this paper is the design, development and implementation of a single framework that combines discrete-time and discrete frequency concepts. The framework has been developed with the use of the software package LabView (Cohen, 1989) The environment implements discrete-time discrete-frequency versions of well-known time-frequency representations, such as the discrete ambiguity function (DAF), the discrete Wigner distribution (WD), the short-time Fourier transform (STFT), and the discrete wavelet transform (DWT).

The environment is divided in three major modules: Analysis and Synthesis module (Figure 6), Demonstration module and a Tutorial module. The Analysis and Synthesis Module provides the user with the essential tools for managing different types of signals as: *.JSON, *.DAT, *.CSV.

It possesses capabilities of retrieval and storage of data. In the environment, special attention was given to the graphical visualization and data rendering capabilities, since signal analysis is one of our man concerns. This part allows the user to choose the type of plot, the color-map, the shading and to rotate the figure. The environment also allows individual use of the tools and comparison of tool application results.

The discrete synthesis operation can be presented as follows: The Demonstration Module is a self-paced, step by step demonstration of the entire environment, including a user's guide, which has sufficient information on how to use the environment effectively. The tutorial module serves as a teaching and reference tool to the user for the technical aspects related with the development of the environment.

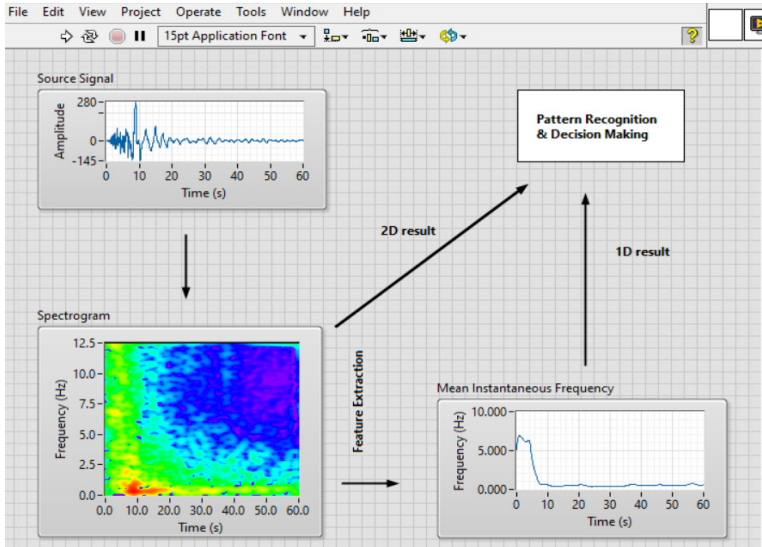


Fig.6. Computational Environment in LabView

In the following section some results obtained in applications such as financial and economic data (Dumitrescu, 2021; Nemtanu et al., 2015) signal analysis are discussed.

5. Application results. Design of Virtual Instrument

The data analysis VI contains three basic elements (Fig. 7). The raw data are retrieved from storage and any noise is removed (detrrending). Then the traditional RMS (25ms windowed) of the signal from each brain zone and trial is computed, normalized, and made available for subsequent statistical comparison with the DTDF (JTFA Joint Time Frequency Analysis) data. Finally, the JTFA is performed, using the National Instruments JTFA Toolkit, and then the median frequency trace is calculated for each brain zone and trial. Figure 8 depicts the result of the STFT spectrogram from financial data (Dumitrescu, 2021; Mihura, 2021; Samat, and Mahesh, 2020; Olansen, 2002)

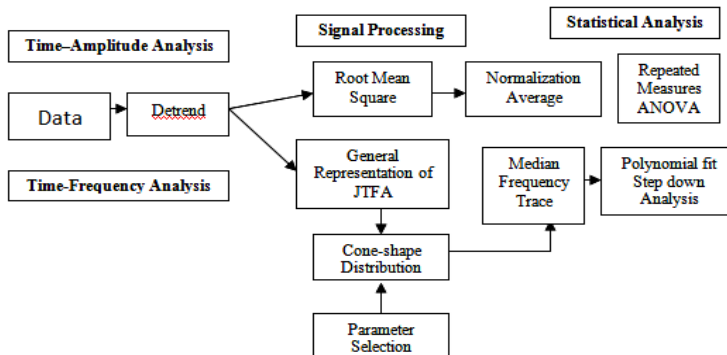
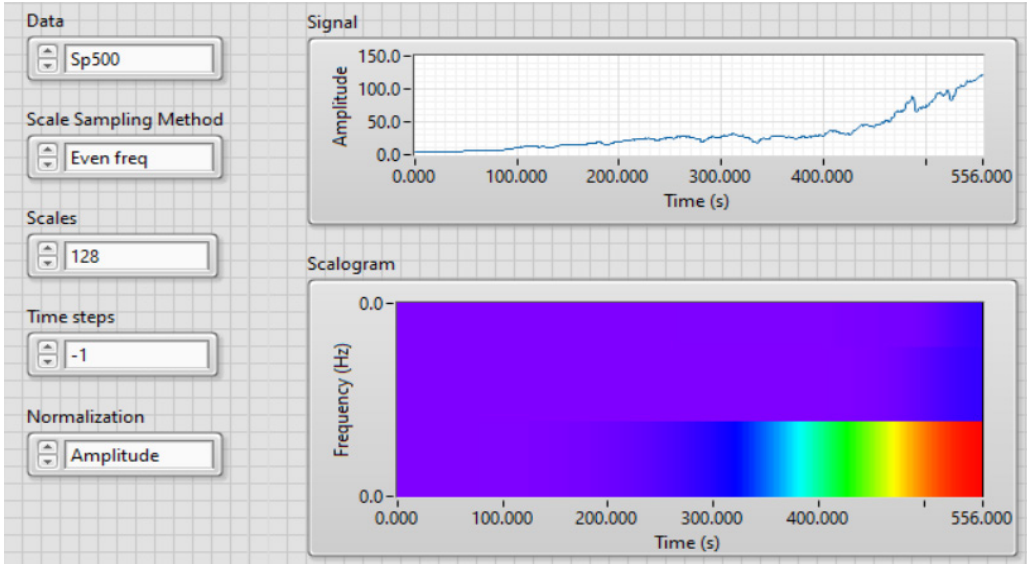
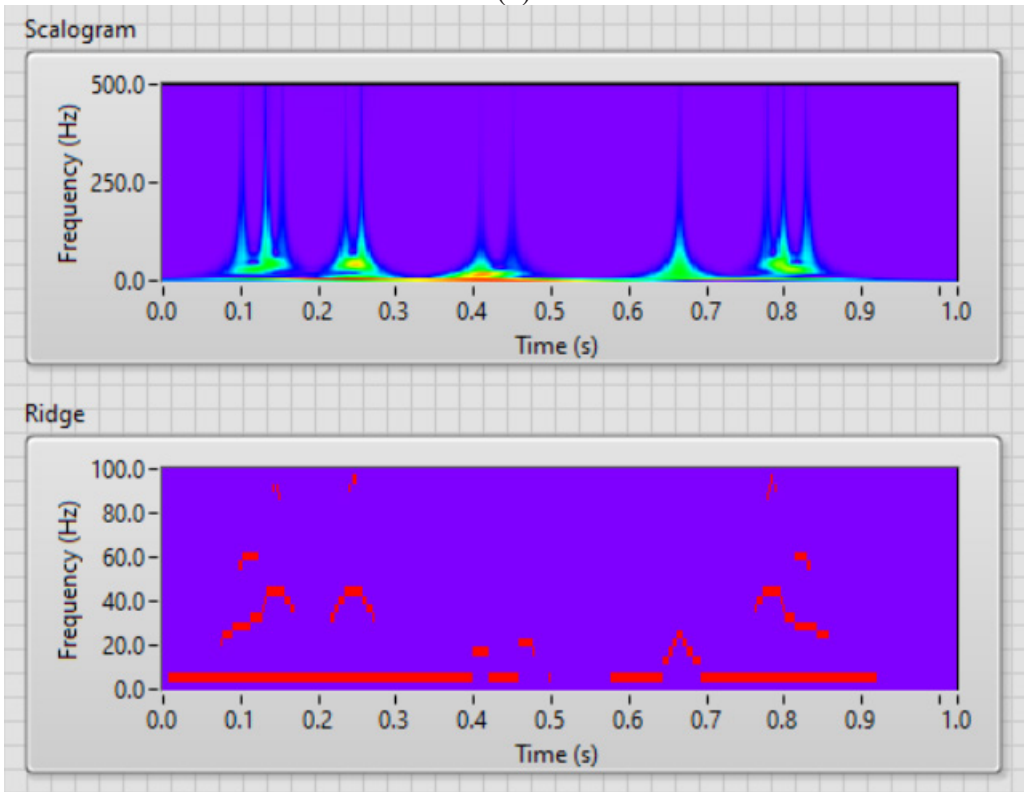


Fig.7. Schematic diagram of the data analysis process. The raw data are retrieved from storage, detrrended, and then processed using traditional time-amplitude methods (top row) or using JTFA (bottom row).



(a)



(b)

Fig. 8. JTFA results from the financial series using (a) STFT analysis and (b) WT analysis

At the right of the spectrogram, the color bar helps determine the content of frequency at a specific time. The blue color (bottom of the color bar) means low quantity of frequency content and the red (top of the color bar) means high quantity of frequency content. From here we can determine that there is high content of frequency at low frequencies. Now the interference signal still appears, as a peak in the frequency domain and the extension of this maximum in time is also visible.

6. Conclusion

Like all other sciences, interest of economic has been the relationship between events and their causes. What causes market crisis? Are they caused by an external reason or an economic system's internal instability? If we consider the economic system as an organism rather, then business cycle can be thought of a heart rhythm or brain wave activity that provide some clues to diagnose the historical events.

A computational environment for the analysis of discrete time discrete frequency (DTDF) time-frequency signals has been presented. Application results using the DTDF environment were discussed, where the main objective was the detection of event-related (evoked) potentials result from external brain excitation that can degrade the regular brain activity can be improved using time-frequency signal analysis tools. For this the STFT was used. The event potentials can be detected and visualized easily in the time-frequency plane. This makes it easier to develop filters for the interference removal. Using JTFA, we hope to elucidate time-varying change in financial and economic data, revealing much more information about the time history of financial activity.

In this paper, we demonstrated that JTFA has great potential in studying stock market or financial date movements. By properly detrending, the complicated economic behavior could be characterized by a long-term trend plus short-time business cycle. Using the time-variant filter, we can remove the random noise in economic data financial changing. JTFA may be used for economic diagnosis of historical shocks and economic forecasting of evolution points.

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QUALITY OF ACCOUNTING INFORMATION – BETWEEN UNCERTAINTY AND AMBIGUITY

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Abstract: *The parameters of the effectiveness of information are determined by the degree of subjectivity-objectivity, by the user's commitment to it, by the temporal duration taken as a reference, but also by qualitative and quantitative aspects, the most expressive example being the notion of "accounting information". A utility value is associated with information, representing the possibility of savings, and this is calculated on the basis of the difference between the effects of a decision promoted with and without the knowledge component. The utility value is directly influenced by the physical and moral depreciation that takes precedence. Information is exposed to a high degree of degradation, which is automatically included by the actions of production and diffusion resulting from the diversified and polyvalent interaction with the sum of information in a given environment.*

Keywords: *accounting information, accounting standard, uncertainty, benefits, paradigm*

Challenges of Uncertainty in Accounting Standards

Accounting standards are essential parts of the accounting language. Using International Financial Reporting Standards (IFRS) as an example, up to 156 jurisdictions consider IFRS as the global financial reporting language, and 144 of them require IFRS Standards for all or most publicly accountable domestic entities (IFRS Foundation, 2019).

IFRS are principles-based accounting standards designed for interpretation and professional judgment (Bradbury & Schröder, 2012). Previous studies have highlighted that IFRS has no guidelines on how to use uncertainty expressions (Du & Stevens, 2011; Huerta, Petrides, & Braun, 2016; Salleh, Gardner, Sulong, & McGowan, 2011). For example, in measuring the fair value of an asset, a reporting entity should reasonably assess the alternative assumption or expected cash flow from the accounting. The terms reasonable possible and expected are expressions of uncertainty and the significance of these subject to interpretation and professional (Chesley, 1986; Davidson & Chrisman, 1994; Doupnik & Richter, 2003).

Because of their dependence on professional interpretation, expressions of uncertainty are often consistently missing and such meanings and inconsistencies will reduce comparability between companies and financial statements (Simon, 2002).

Such deviations between meanings and interpretations could affect the effectiveness of communication in accounting (Laswad & Mak, 1997). Several concerns about the use of uncertainty expressions and their negative impact on judgment have also emerged and decisions (Chand et al., 2012; Piercey, 2009). Although evidence highlighting problems with the use of uncertainty expressions in accounting has accumulated, regulators and accounting practitioners have yet to propose a solution. For example, IFRS 5 provides little guidance on the meaning of uncertainty, stating that „likely = more likely than not” and „highly likely = significantly more likely than not”. Consequently, this leads to a critical question about the fundamental meanings of uncertainty expressions and how they can be used effectively to facilitate financial reporting and decision making.

IFRS contains a significant amount of uncertainty expressions. A detailed review of IFRS reveals the use of over 40 different uncertainty terms covering almost every aspect of financial reporting, such as the decision on the accounting recognition of items. Similarly, entities that have adopted IFRS also use similar terms in their financial and annual reports, either those directly quoted from IFRSs or similar.

Due to the IFRS principles-based approach, the use of uncertainty expressions under IFRS provides benefits for accounting communication: it facilitates professional judgement and allows for adjustments between different jurisdictions (e.g. countries) with different economies and cultural scales (Weiss, 2008; Zeff, 2007). However, the use of uncertainty expressions

also creates significant challenges in achieving consistent accounting judgment (Chand et al., 2012; Erb & Pelger, 2015).

First, preparers of accounting information using accounting standards need to understand the meaning of the uncertainty expressions they choose to use, including how they represent the level of uncertainty and, if applicable, how they are interpreted numerically.

Each reader may perceive verbal uncertainty expressions differently (see Brun & Teigen, 1988; Juanchich et al., 2012) and previous studies have already shown that language and personal attributes could significantly influence how they are interpreted see Chand et al., 2012; Davidson & Chrisman, 1994; Huerta, Petrides, & Braun, 2013).

Second, the use of verbal uncertainty expressions in accounting standards may not have had consequences for the handling of information. Because people perceive verbal uncertainty expressions differently and because accounting standards regulators have not issued standardized numerical scales, preparers of accounting information may be able to take advantage of ambiguity in verbal expressions to disguise adverse risks and deals (Kelton & Montague, 2018; Piercey, 2009). Piercey, (2009, p. 331).

Third, and perhaps most controversially, the use of verbal uncertainty expressions in accounting standards would affect the effectiveness of communication, thereby reducing the quality Wright, an economist at the University of Chicago, was the best known author of *Risk, Uncertainty and Profit. Uncertainty Expressions in Accounting* (Laswad & Mak, 1997; Simon, 2002). Simon, (2002) argued that many expressions of verbal uncertainty lack consensus in interpretation and therefore result in low communication effectiveness in financial reporting. Theoretically, people can use verbal and numerical uncertainty expressions interchangeably. According to Hardman and Macchi, (2003), research on uncertainty expressions includes three major paradigms: translation, semantics and pragmatics. Most uncertainty expressions studies are based on the translation paradigm: finding the most efficient translation method verbal probabilities into numbers. A general method is to give a percentage from 0 to 100 corresponding to verbal phrases, which Reagan et al. (1989, p. 433) refer to as „word to number conversion”. Another method is to judge the degree of uncertainty on the [0, 1] scale or p-value in a specific context, which is called the membership function (Wallsten, Fillenbaum and Cox, 1986).

Similar studies have been conducted in forecasting (See - Marom, 1982) and organizational behavior (Brun & Teigen, 1988). In particular, a research approach based on the translation paradigm has been particularly popular in accounting (see Chand et al., 2012; Chesley, 1986; Davidson & Chrisman, 1994; Doupnik & Riccio, 2006; Doupnik & Richter, 2003; Doupnik & Richter,

2004; Hu, Chand, & Evans, 2013; Laswad & Mak, 1997). A typical context in accounting research is the investigation of cross-national and cross-variation of word-to-number conversion. The example below is drawn from a study of conversion in the 2003 Doupnik and Richter study (p.32):

For example, when deciding on options for a business strategy, “Strategy A is somewhat possible success” directs one to anticipate a positive outcome, while “Strategy B success is uncertain” directs one to anticipate an adverse outcome. As evident in the previous literature, possible and uncertain share similar numerical meanings, but differ significantly in directional meanings. As a result, research results based on the semantic paradigm might be problematic compared to those based on the translation paradigm.

Moreover, some studies focus on understanding the effect of uncertainty expressions in decision making: the so-called pragmatic paradigm. This paradigm, which has borne fruit in experimental psychology, is mainly based on laboratory experiments.

Accounting solutions

Definitions and discussions found in the literature suggest that expressions of uncertainty can be used in different contexts when providing objective or subjective information. The reason for using uncertainty expressions to communicate objective information can be attributed to a lack of accurate knowledge about the value of a measurement, such as the outcome, error, and quality of the information. Instead, the rationale for using uncertainty expressions to communicating subjective information is mainly due to personal interpretations of uncertainty, such as confidence, opinion and understanding. Based on these differences, this study proposes two strategies for the use of uncertainty expressions in accounting: Verbal-Numerical (V-N).

Strategy at scale addresses objective uncertain accounting information. The V-N disclosure strategy relates to subjective uncertain accounting information. As discussed above, the specific application of uncertainty expressions in accounting is based on accounting information that is objective or subjective. This paper develops two separate strategies - objective and subjective - for reporting, communicating, and estimating uncertain accounting information using uncertainty expressions.

One of the key functions of accounting information is to support managers in decision-making. Depending on the uncertainties and other characteristics related to the decision situation, accounting information can have different roles, from a response machine to a source of inspiration (Burchell et al., 1980). As the potential roles of accounting information in decision making

vary, so do the requirements for information to support reporting. It is worth noting that accounting information often fails to sufficiently support managers: irrelevant or useless.

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ACCOUNTING ADJUSTMENT IN THE CONTEXT OF EUROPEAN FUNDS - CHALLENGES AND SOLUTIONS THROUGH SIMULATION

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Abstract: *The implementation of European funds is a critical pillar in Romania's economic and social development, yet it often faces significant accounting challenges, particularly during the pre-financing and accounting reconciliation phases. This study addresses the difficulties encountered in the process of adjustment and accounting reconciliation within projects funded by European funds, through a simulation. By examining the scenario of incomplete recording of amounts received as pre-financing, the paper explores the accounting adjustment methods necessary to ensure compliance and financial transparency. The results emphasize the importance of careful planning and the implementation of rigorous verification and accounting adjustment procedures, essential for the successful management of European funds. The adopted perspective encourages a proactive and integrated approach, suggesting that adaptability and accounting precision are keys in overcoming financial obstacles and achieving the objectives of projects with European funding.*

Keywords: *European funds, prefinancing, accounting reconciliation, accounting adjustment, challenges and solutions, simulation, financial compliance*

JEL Classification: *H81, C63, M41, M49, D61*

1. Introduction

1.1. Accounting Reconciliation: Context for ensuring compliance & transparency

In recent decades, European funds have become a vital source of financing for projects across the European Union, supporting innovation, development, and cohesion in various sectors. These funds represent not only an opportunity for growth and expansion but also a significant challenge in terms of

financial and accounting management. Compliance with accounting records and accounting reconciliation at the end of European projects are essential for ensuring transparency and the efficient use of allocated resources. This contextual discussion explores the complexities associated with the management of European funds, emphasizing the importance of strictly adhering to accounting principles and EU regulations at every stage of the project's life cycle. The Ministry of Investments and European Projects creates guides for beneficiaries, designed to offer guidance in the course of running projects financed through non-repayable grants. Beneficiaries are responsible for requesting reimbursement only for those eligible costs, which have been properly recorded in the project's analytical accounting register. It is crucial that the accounting records of programs supported by European funds are conducted separately, through a system of analytical accounts within the main accounting records of the beneficiary or partners, thus ensuring complete transparency of all transactions and providing the necessary information. Organizations accessing these resources will develop sets of procedures and accounting policies that meet both general accounting standards and the conditions stipulated in the contractual agreements between parties. A key principle in creating these accounting procedures is to align the costs supported by subsidies with the income obtained from them, thus following the principle of accrual accounting. In accounting terms, non-repayable European funds are recognized as subsidies, whether related to assets and investments, or associated with revenues or current operations.

Regardless of the operational program's name - whether it's the Regional Operational Program (POR), the Human Capital Operational Program (POCU), the National Rural Development Program (PNDR) for the 2014-2020 financial allocation period, or the National Recovery and Resilience Plan (PNRR), the Education and Employment Program (PEO), the Social Inclusion and Dignity Program (PIDS), the Regional Programs (PR), or the Just Transition Program (PTJ) for the current 2021-2027 period - accounting reconciliation, in the context of correctly finalizing the records of amounts received for pre-financing and maintaining a distinct accounting of the project, is essential and must be carried out in strict adherence to recognized accounting principles. This involves not only precise and transparent documentation but also careful interpretation of the rules and regulations so that each transaction accurately reflects the economic reality of the project and ensures compliance with the funder's requirements. The accounting reconciliation process is not just a formality but a crucial phase that validates the financial integrity of the project, highlighting the organization's commitment to rigorous and responsible financial management. Therefore, a methodical and professional

approach contributes not only to the success of managing European funds but also to strengthening trust and transparency in the relationship with funding institutions, thereby ensuring a solid foundation for future achievements and continuous access to European financial support.

The successful implementation of projects funded by European funds crucially depends on the ability of organizations to navigate through a complex legislative and accounting framework. From the initial moment of obtaining pre-financing to the subsequent stages of reporting and justifying expenses, each step must be approached with meticulous rigor. Accounting records must not only reflect financial accuracy but also demonstrate compliance with the specific objectives and requirements set by the EU. Therefore, the process of accounting reconciliation becomes a critical element in completing the project, ensuring that all funds have been used according to their initial purpose and that any discrepancies or errors are identified and corrected accordingly.

Against this backdrop, the analysis focuses on the challenges and solutions associated with compliance with accounting records in European projects. We explore the essential role of simulations and accounting adjustments in the reconciliation process, highlighting how these practices contribute to robust financial management and adherence to principles of transparency and accountability. In this context, we also address the impact of technology and accounting innovations in facilitating processes, thereby improving the efficiency and precision of financial reporting.

Thus, managing European funds represents a significant responsibility for any beneficiary organization, requiring particular attention to detail and a deep understanding of accounting and financial rules. In this introduction, we lay the groundwork for a comprehensive analysis of how organizations can successfully navigate the challenges associated, ensuring that each project not only achieves the set objectives but does so in full compliance with the strict requirements imposed by the European Union.

1.2. European Projects: Definition, Progress, and Accounting

In the realm of funding and development, European projects stand as the cornerstone of progress and innovation, addressing a wide range of objectives from economic growth and social cohesion to supporting ecological and digital transitions. Defined by accessing funds provided by the European Union, these projects are tailored to meet the specific needs and challenges of member states and their regions, thereby facilitating the achievement of common strategic goals.

The progress made in the implementation of European projects is vital for ensuring sustainable and balanced development across the entire Union. This progress is measured by meeting the specific indicators of each operational program, reflecting a direct positive impact on local economies and European

citizens. Continuous monitoring and evaluation efforts are critical for the ongoing adjustment and enhancement of strategies and actions.

Within this complex and dynamic setting, accounting plays a pivotal role in the effective management of allocated financial resources. European project accounting demands a rigorous and detailed approach, ensuring compliance with EU financial regulations as well as transparency and accountability in the use of funds. Consequently, the adoption of appropriate accounting systems is necessary, systems that allow for precise transaction recording, careful monitoring of financial flows, and the execution of accounting reconciliation at the end of projects. This accounting endeavor not only facilitates correct and timely reporting but also contributes to assessing the impact of projects, thus highlighting their real contribution to the established development objectives.

Therefore, in an era where European projects are more relevant than ever, the harmonious integration of definition, progress, and accounting becomes crucial for fulfilling the aspirations and expectations of the European community. The role of accounting, in particular, goes beyond its traditional function, becoming a pillar of transparency, efficiency, and ultimately, the success of these ambitious initiatives.

2. Financial and Accounting Management of European Projects

2.1. The Importance of Accounting in EU-Funded Projects

Accounting, at its core, is much more than just the recording of financial transactions; it represents the backbone of transparency, accountability, and compliance in any project funded by the European Union. Its role surpasses traditional aspects, evolving into a crucial tool for strategic planning, performance monitoring, and ensuring financial integrity. Within the context of European projects, accounting takes on even greater significance, considering the complexity of the EU's rules and reporting requirements. The importance of accounting in EU-funded projects is multi-layered. Firstly, it ensures compliance with European financial regulations and standards, a key element in preventing audit-related risks and maximizing the project's chances of success. Every euro spent must be justified and aligned with the project's objectives, and accounting provides the necessary framework to demonstrate this.

In addition to compliance, accounting contributes to the efficiency of fund management. Through careful monitoring of financial flows and budgets, accountants help to early identify any deviations or financial issues, allowing for informed decisions to correct the course of action. This not only optimizes resource use but also supports the long-term financial sustainability of the project.

Accounting also plays a crucial role in assessing the performance and impact of the project. Detailed financial analysis enables stakeholders to

understand whether project objectives are being achieved in a cost-effective manner, offering a solid foundation for evaluations and reports to funders. This not only ensures transparency and accountability but also contributes to the trust and credibility of the beneficiary organization in the eyes of the community and partners.

Accounting within EU-funded projects is not just a formal requirement but a vital component that directly influences the success and sustainability of the project. By ensuring rigorous and transparent financial management, accounting not only facilitates compliance with European standards but also the efficient achievement of development goals, thus solidifying the foundation for a prosperous and inclusive future within the European Union.

2.2. Challenges and Solutions in Accounting Reconciliation and Adjustment

The effective management of European funds introduces various accounting challenges, particularly in the stages of reconciliation and adjustment. These processes are crucial for ensuring the financial integrity and compliance of projects but often encounter significant obstacles.

Challenges

One of the main challenges lies in the complexity of EU rules and requirements, which demand a deep understanding and precise application in accounting practice. Regulations can change or be subject to different interpretations, leading to confusion and errors in accounting records.

Another major challenge is maintaining distinct accounting for each project, which allows for clear tracking of eligible expenses and received funds. This requires adaptable accounting systems and efficient transaction segregation, which can be difficult for organizations with limited resources or multiple concurrent projects. Also, the accounting reconciliation process at the end of the project can be complex and time-consuming, involving a detailed verification of all transactions and the adjustment of any discrepancies. This process is critical for the successful completion of the project and requires particular attention and specialized skills

Solutions

To tackle these challenges, one key solution is investing in continuous professional training and access to updated resources. The accounting team must be up-to-date with the latest changes in EU regulations and possess the necessary skills for the correct application of accounting standards.

Implementing robust and flexible accounting systems is also essential. Modern technology can provide efficient solutions for transaction segregation,

budget monitoring, and facilitating accounting reconciliation. Specialized software can automate some of the repetitive processes and reduce the risk of error. Close collaboration with auditors and financial consultants represents another important strategy. These professionals can offer support in interpreting EU rules, preparing for audits, and applying best practices in accounting for European projects.

Finally, developing clear internal procedures and rigorous documentation of all transactions and accounting decisions are fundamental. These practices contribute to transparency and facilitate the reconciliation process, ensuring that all funds are used according to their intended purpose and that the project is ready for final checks.

In conclusion, while the accounting management of European funds involves significant challenges, there are a series of strategies and solutions that can facilitate the process. By adopting a proactive approach and using available resources, organizations can successfully navigate the complexities of accounting reconciliation and adjustment, ensuring the success and sustainability of their European projects.

2.3. Financial Compliance: Ensuring Accuracy in Accounting Records

Financial compliance plays a pivotal role in any project funded by the European Union, acting as a cornerstone that ensures not only the integrity and transparency of the accounting process but also the ongoing eligibility for funding. In this context, ensuring accuracy in accounting records becomes essential, representing a continuous effort to align accounting practices with the standards and requirements imposed by European funding structures.

Financial compliance translates into strict adherence to the financial and accounting regulations established by the European Union, with the primary goal of preventing fraud, errors, and any other irregularities that could affect the smooth running of the project. Precise and transparent accounting records are indispensable to demonstrate that funds have been used according to their purpose and to facilitate audit and evaluation processes.

Challenges and Strategies in Ensuring Accuracy and Compliance

Among the major challenges are the complexity of tax and accounting legislation, frequent changes in regulations, and the need to correctly interpret the various requirements specific to each funding program. Additionally, maintaining detailed and organized records of all financial transactions requires robust accounting systems and rigorous internal procedures.

To efficiently navigate these challenges, organizations need to prioritize the continuous update of the accounting teams' knowledge regarding current

legislation and regulations. This can be achieved through ongoing training programs and access to specialized resources. Moreover, the implementation of adaptable and scalable accounting information systems, capable of managing the financial complexity of European projects, is critical.

Effective collaboration between accountants, project managers, and external consultants can facilitate the correct interpretation of requirements and the application of best practices in project accounting. This joint effort ensures a unified vision of financial management and contributes to the quick identification and resolution of any compliance issues that may arise.

In summary, financial compliance and ensuring accuracy in accounting records are essential pillars for the success of projects funded by European funds. By adopting a proactive approach, based on knowledge, technology, and effective collaboration, organizations can overcome accounting challenges and contribute to the achievement of the ambitious objectives of the European Union, ensuring that each project is not only a financial success but also a model of integrity and transparency.

3. Case Study: Simulation of Accounting Reconciliation in a European Project

3.1. Presentation of the Context and the Problem

Context

In the vast landscape of European funding, efficiently and compliantly managing funds is a constant challenge for beneficiary entities. This case study focuses on a non-profit organization that accessed European funds for the development of an ambitious education and training project. Despite initial success in implementing project activities and achieving interim objectives, the organization faces difficulties in the final stage of accounting reconciliation, an essential step for concluding the project and justifying the use of funds to the management authority.

The central issue identified relates to the incomplete recording of amounts received as pre-financing and the challenges encountered in maintaining distinct and accurate accounting for the project. These deficiencies have led to significant discrepancies between accounting records and financial documentation, complicating the reporting process and endangering eligibility for final funding tranches.

The causes leading to this situation include inadequate financial management planning for the project, insufficient knowledge of the accounting team regarding the specifics of European fund accounting, and the use of an accounting system unsuitable for the complexity of the project's activities. Additionally, inefficient communication between the involved departments exacerbated the problem, preventing timely identification of discrepancies and the application of necessary corrective measures.

The impact of this problem is multidimensional. Beyond the immediate risk of losing remaining EU funding, the organization faces potential long-term repercussions, including reputation damage, difficulties in accessing future funding, and possible financial penalties from the management authorities. Moreover, this situation affects the organization's ability to accurately assess the impact and efficiency of the project, compromising long-term strategic objectives.

In the following sections, we will explore the methodology applied to address and solve this problem, as well as the lessons learned in the process of simulating accounting reconciliation, with the aim of providing valuable insights and recommended practices for the financial management of European projects.

The Problem

In the world of grants, these are not considered directly as profit or reserves upon receipt, as they come with certain commitments for the beneficiary. Their reflection in accounting depends on the project stage and the nature of the involved costs. For instance, subsidies received for expenses that have not yet been realized do not qualify as immediate revenues because these expenses are still pending. When a subsidy covers actual expenses, it is recognized as income at the same time as the expense.

Government compensations for expenses or losses are recognized as profit or loss at the time those costs are recorded. Financial aids without future obligations are seen as revenues when they become actual liabilities.

Subsidies related to depreciable assets are generally recognized as profit as the respective assets are depreciated. Similarly, subsidies for production or services align with income at the time expenses are recognized. In the case of subsidies for land involving specific contractual obligations, they are accounted for as revenues over the period covering the associated obligation costs.

Practice requires careful correlation of expenses supported by subsidies with the corresponding income in the financial accounts, ensuring that any received amount is correctly recorded and transparently reflects the nature of the supported costs. Any reimbursement or approval of amounts is based on clear and precise documentation, so that the initial records of receivables are appropriately adjusted, providing a faithful picture of the project's financial situation. In our study, we analyze a situation where subsidies received for a European project remained in account 472 "Revenues Recorded in Advance," instead of being appropriately recognized and correlated with specific expenses. This omission led to a distorted view of the financial situation and potential complications in accurate reporting according to accounting standards.

Ideally, these subsidies should have been reflected as revenues only when the related expenses were actually recorded, thus ensuring that each

received amount is aligned with a specific and eligible expense. However, in the absence of these recordings, the organization risks facing difficulties both in financial planning and in demonstrating financial compliance in the event of an audit.

The situation now requires urgent corrective action to realign the accounting records and recover compliance with the financial requirements of the European funder. This will involve a careful review of transactions, detailed reconciliation of accounts, and collaboration with accounting experts to ensure a complete and accurate recovery. The narrative presented here reveals a key problem faced by organizations in managing the finances of European projects and underscores the vital importance of adhering to accounting procedures to ensure long-term success.

3.2. Applying the Reconciliation Methodology

To address the identified issue and restore the financial and accounting compliance of the European project, the organization decided to implement a rigorous accounting reconciliation methodology. The process was structured in several essential stages, each serving its specific role in ensuring the accuracy of financial records and reconciling the amounts received as pre-financing with the actual expenses of the project.

Review and Assessment of the Current Situation

The first step involved a comprehensive review of all accounting records and financial documentation related to the project. This included a detailed verification of invoices, contracts, expense reports, and bank statements, aiming to identify any potential discrepancies and mismatches.

Detailed Transaction Reconciliation

The accounting team performed a detailed reconciliation of each transaction, ensuring that all received and spent amounts were correctly recorded and accurately reflected the project's activities. This step included adjusting accounting entries where necessary and correctly allocating pre-financing amounts to the project's eligible expenses.

To adjust the accounting situation described and clear the entries from account 472 "Revenues Recorded in Advance" in line with the project's completion, a series of accounting steps will be followed. The necessary accounting entries depend on the specifics of the transactions carried out and the applicable accounting regulations at the national level.

- 1. Recording Realized Revenues:** The first step is to transfer the pre-financing amount from "Revenues Recorded in Advance" (account

472) to realized revenues. This reflects that the pre-financed funds have been spent according to their purpose and officially recognized by the Managing Authority as eligible. The accounting entry will look like this:

- Debit account 472 “Revenues Recorded in Advance”
 - Credit specific project revenue accounts (e.g., 741 “Subsidies for Investments” or a similar account, depending on the nature of the validated revenues)
2. **Reflecting Expenses:** It will ensure that all project expenses have been correctly recorded in their respective expense accounts. This is a prior, but essential step for the correct reconciliation of the funds.
 3. **Regularization of the Pre-financed Amount:** After the revenues have been recognized, it is necessary to ensure that the pre-financed amount is reflected as being fully used or reimbursed. If there are unspent amounts or sums that need to be returned to the funder, these should also be adjusted through corresponding accounting entries.
 4. **Project Closure:** Once all transactions have been correctly reflected, and the project’s final report has been accepted, it will ensure that all project-related accounts are properly closed. This includes the final transfer of amounts from account 472, so there are no unjustified balances.
 5. **Verification and Reconciliation:** It will conclude with a detailed check of all accounting records related to the project to ensure everything has been recorded correctly and there are no discrepancies. A reconciliation between the accounting records and the project’s final report, as well as the supporting documentation, is crucial to ensure the financial-accounting correctness of the project.
 6. **Documentation and Archiving:** It will ensure that all accounting records and supporting documentation are well documented and archived in accordance with national regulations and the funder’s requirements. This will facilitate any future audits and ensure compliance with applicable regulations.

Considering the expenses validated solely with salaries and related contributions, for the balance of account 472 to reach 0, indicating that all pre-recorded revenues have been recognized as actual revenues, in accordance with the expenses made and validated within the project, the steps and accounting entries are:

1. **Transfer of Amounts from 472 to Recognized Revenues:**
 - Initially, you have amounts in account 472 as a result of pre-financing. These amounts need to be transferred to revenues once the expenses are officially recognized.

- **Equation:**

- Debit 472 “Revenues Recorded in Advance”
- Credit 741 “Subsidies for Investments” (or another revenue account suitable for your project)
- This entry reflects that the pre-financed amounts are now recognized as revenues, following the validation of expenses.

2. Reflecting Expenses with Salaries and Contributions:

- Assuming the initial expenses with salaries and contributions were correctly recorded, they would have debited expense accounts and credited liability accounts (for example, liabilities to staff or tax liabilities).

- **Initial Example (assumed already carried out):**

- Debit 641 “Expenses with the salaries of the staff” for the salary amounts
- Debit 645 “Expenses with health social insurances” for contributions
- Credit 421 “Personal - Salary payable” and similar accounts for contributions

3. Actual Payment of Salaries and Contributions:

- At the time of payment, you will make an entry to reflect the movement of money from the bank or cash to employees and institutions.
- **Equation:**
 - Debit 421 “Personal - Salary payable” (and similar accounts for contributions)
 - Credit 512 “Bank accounts in lei” (or another relevant account for the payment made)

4. Final Regularization of Account 472:

- After all these entries, account 472 should accurately reflect the amount of pre-financing that has been spent and validated. If there is still a balance, this indicates a discrepancy between the pre-financed amounts and the expenses made and recognized.
- If the balance is a credit (i.e., you still have amounts in 472), you need to check:
 - Have all pre-financed amounts been transferred to revenues?
 - Are there unrecorded or unvalidated expenses that should be reflected?

If after carrying out these accounting entries, account 472 does not reflect a zero balance, it is necessary to identify the cause of the discrepancy. This could

involve reviewing the recorded expenses, the amounts transferred as revenues, and, if applicable, making corrections according to supporting documentation and approvals from the AM. It is crucial to maintain a clear and detailed record of all transactions and to consult with a professional accountant or auditor for specific assistance and to ensure compliance with accounting standards and project requirements.

Consultation and Collaboration with the Management Authority

Alongside internal efforts, the organization closely collaborated with representatives of the management authority to validate the reconciliation procedures and to ensure they comply with EU requirements and guidelines. This consultation provided valuable insights and contributed to improving the organization's accounting practices.

Documentation and Reporting

All stages of the reconciliation process and the results obtained were thoroughly documented, laying the groundwork for the reporting phase to the management authority. The report included a description of the applied reconciliation methodology, adjustments made, and financial control measures implemented to prevent similar issues in the future.

The outcomes of applying this reconciliation methodology were positive, successfully restoring the financial accuracy and accounting compliance of the project. This process not only ensured eligibility for the remaining funding but also strengthened the organization's ability to efficiently manage European funds, thereby contributing to the long-term sustainability and success of its initiatives.

3.3. Accounting Equation Simulation

We have the following key simulated information:

- Total project value: 47,472.00 RON
- Total pre-financing received: 45,098.40 RON
- Own contribution (5%): 2,373.60 RON
- Total eligible value: 45,098.40 RON
- Total validated amount: 43,000.00 RON
- Ineligible expenses: 2,098.40 RON
- Total amounts to be refunded from pre-financing: 2,098.40 RON
- Total amounts refunded after accounting reconciliation with the management authority: 2,098.40 RON

The initial accounting entries can be:

1. Recording the receipt of pre-financing:

- Debit 512 “Bank accounts in RON”: 45,098.40 RON
- Credit 472 “Revenues Recorded in Advance”: 45,098.40 RON

2. Recording the own contribution:

- Debit 512 “Bank accounts in RON”: 2,373.60 RON
- Credit 455 “Owner’s Contribution”: 2,373.60 RON

During the project, entries for salaries and contributions expenses: **3. Recording salary expenses:**

- Debit 641 “Expenses with the staff salaries”: the total amounts for net salaries
- Credit 421 “Personal - Salary payable”: the total amounts for net salaries

4. Recording social contributions expenses:

- Debit 645 “Expenses with social insurances”: the total amounts for contributions related to salaries
- Credit 431 “Social Contributions Payable”: the total amounts for contributions related to salaries

Upon project completion and after validating the expenses: **5. Transfer of validated amounts from recorded advance revenues to actual revenues:**

- Debit 472 “Revenues Recorded in Advance”: the total validated amount of 43,000.00 RON
- Credit 741 “Subsidies for Investments”: the total validated amount of 43,000.00 RON

6. Recording ineligible expenses to be refunded:

- Debit 741 “Subsidies for Investments”: 2,098.40 RON
- Credit 512 “Bank accounts in RON”: 2,098.40 RON

Final accounting entries for reflecting the refund: **7. Refunding the unvalidated amount to AM:**

- Debit 472 “Revenues Recorded in Advance”: 2,098.40 RON
- Credit 512 “Bank accounts in RON”: 2,098.40 RON

This last entry adjusts the balance of account 472 to zero, reflecting that all advance recorded revenues have been either recognized as revenues or refunded to AM.

Table 1. Reconciliation and Final Adjustment - Accounting Entries

No.	Debit Account	Debit Amount (RON)	Credit Account	Credit Amount (RON)	Explanation
1	472 "Revenues Recorded in Advance"	43,000.00	741 "Subsidies for Investments"	43,000.00	Recognition of revenues from the validated subsidy spent according to the project
2	741 "Subsidies for Investments"	2,098.40	512 "Bank accounts in RON"	2,098.40	Refunding to AM the ineligible and unvalidated amount from pre-financing
3	472 "Revenues Recorded in Advance"	2,098.40	512 "Bank accounts in RON"	2,098.40	Adjusting the advance revenue account for the amounts returned

3.4. Analysis of Results and Implications for Accounting Practice

The analysis of the accounting reconciliation process and the adjustments made within the European project highlights several valuable lessons and significant implications for accounting practice, especially in managing projects funded by the European Union. This endeavor provided not only an immediate solution to the specific problems encountered but also a replicable and improved model of best practices for future projects.

Positive Outcomes:

- **Restoration of Financial Compliance:** The rigorous reconciliation process led to the identification and correction of financial discrepancies, ensuring compliance with EU regulations and ongoing eligibility for funding.
- **Enhanced Transparency:** The implemented monitoring and reporting system increased financial transparency, facilitating a better understanding of the project's financial status both internally and in relation to management authorities and external auditors.

- **Increased Trust from Funders:** Demonstrating rigorous and responsible financial management has strengthened the trust of funders and project partners, paving the way for future collaborations.

Implications for Accounting Practice:

- **Need for Continuous Training:** The case underscores the importance of continuous training for accounting professionals to keep their knowledge up to date regarding European financial regulations and reporting practices.
- **Adaptability of Accounting Systems:** It highlights the need for flexible and adaptable accounting systems capable of managing the accounting specifics of European projects and facilitating monitoring and reconciliation processes.
- **Effective Collaboration:** It reveals the importance of close collaboration between the accounting team, project management, and external consultants to ensure compliance and efficiency in managing funds.
- **Internal Control Procedures:** It emphasizes the critical role of robust internal control procedures in preventing financial discrepancies and facilitating efficient accounting reconciliation.

The successful implementation of the reconciliation methodology within the European project demonstrates that, by adopting appropriate accounting practices and focusing on the principles of transparency, accountability, and compliance, organizations can overcome financial challenges and ensure the sustainability of EU-funded projects. This case study serves as a reference point for organizations looking to improve the accounting and financial management of European projects, providing a solid foundation for developing effective and sustainable long-term strategies. Therefore, it is recommended that these lessons be integrated into the standard accounting practices of organizations to facilitate better management of future European projects and to maximize their positive impact on the targeted communities and sectors.

4. Conclusions

The accounting reconciliation process within the context of managing European projects presents a series of challenges and essential opportunities for beneficiary organizations. The analysis conducted in this article, starting with the contextualization of financial and accounting issues and continuing with detailing the applied methodology and learned lessons, underscores the importance of a proactive and informed approach in the financial management of projects funded by the European Union.

By addressing the issues of reconciliation and accounting adjustments in detail, organizations can significantly improve the financial management of European projects, ensuring they are implemented efficiently and in accordance with EU requirements. The experiences and practices presented in this article can serve as a guide for entities facing similar challenges, providing them with a reference framework for continuous improvement of accounting and financial processes.

In conclusion, success in managing European funds lies not only in the ability to navigate the complexity of financial regulations but also in organizations' commitment to applying solid principles of accounting and financial management. Thus, ensuring transparency, compliance, and efficiency at all stages of the project lifecycle will not only facilitate the achievement of proposed objectives but will also contribute to strengthening trust in the organization's ability to manage European resources responsibly and sustainably.

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