

## **PREMISES OF DIGITAL ACCOUNTING EDUCATION AT THE PREUNIVERSITY EDUCATIONAL LEVEL. CASE STUDY RESEARCH**

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***Abstract:** The substantial digitization of the contemporary society strongly imprints the approach of the learning process, changing perceptions and mentalities and drawing new directions of action regarding the formation of the informational baggage, be it a general or a particular one. Accounting is a field impacted by the phenomenon of modernity in a resounding manner, which determines the reshaping of the entire way of reporting to the teaching-learning process. The field of accounting can no longer be seen today outside of modern information technology, the interdependence between computer science and accounting is more and more intense. Digital accounting, in all its attributes and valences, requires the accumulation of digital skills that give the premises for the management and use of accounting and IT products progressively in a complex manner, with a defining role in meeting the increasingly demanding information needs of management structures. In this way, through this paper, we aim to outline the foundations of digital accounting education in pre-university education with economic profile, taking into account the increased importance of early training among future professional accountants. The aim of our research is to analyze the sustainability of the training that pre-university economic education offers to current and future graduates in the field of accounting through the issues addressed in the curriculum, in order to find out the new information technologies integrated in the accounting processes. The main objective of the paper is to identify the level of digital skills of students in pre-university economic education, a level that ensures adequate and harmonious development as a prerequisite for the use of modern accounting software and IT platforms and also for overcoming the obstacles and challenges of permanent digitization of the accounting field.*

**Keywords:** *digitization, training, skills, accounting, evolution*

**JEL Classification:** A20,O33

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## **Introduction**

Modern society is in a process of constant change under the influence of innovative digital transforming technologies. The duality of the process of digitization of the economy also resonates through the creation of a qualitative new workforce and implicitly replacing the workers with traditional skills and professions (Ershova et al., 2020).

The role, skills and knowledge of the professional accountant are reshaped by phenomena specific to the new trend of modern accounting such as the globalization of business, the spread of advanced technologies, increased governance and regulations in the field. Their ongoing challenge is thus identified in terms of optimizing professional skills, knowledge and capabilities as a foundation for supporting the growth of companies and driving them to cope with the competitive pressure at a national and an international level (Melyk et al., 2020). Since the technological processes have shaped digital evolution, research shows that the success or failure of digital transformation lies in the involvement of people rather than in the attributes and valences of technology itself (Kane et al., 2019). Although strongly influenced by the phenomenon of modernity, the health crisis generated by the emergence and spread of COVID-19 propels companies to a massive digital transformation by reshaping business processes and addressing a new business mindset. (Volberda et al., 2021). The coronavirus pandemic restarts the way of reporting to the notion of work, the accounting profession also facing a series of challenges in terms of mass digitization of the field, an aspect supported by the exponential growth of the financial-accounting software market (Yaremenko et al., 2021). The pandemic context has determined the emergence of some radical forms of digital transformation, the economic and social space being invaded by digital platforms (Gavrilenko & Markeeva, 2020), an aspect which triggers a new mentality focused on advanced and perpetual training actions.

Therefore, against the background of the massive introduction of the technology in the society in general, and of the accounting field in particular, it is necessary to shift the interest towards the continuous acquisition of skills and competences in the field of digitization, as a safe weapon to achieve performance at the professional level in a future dominated by modern technology.

## **International and European perspectives on accounting education in pre-university education**

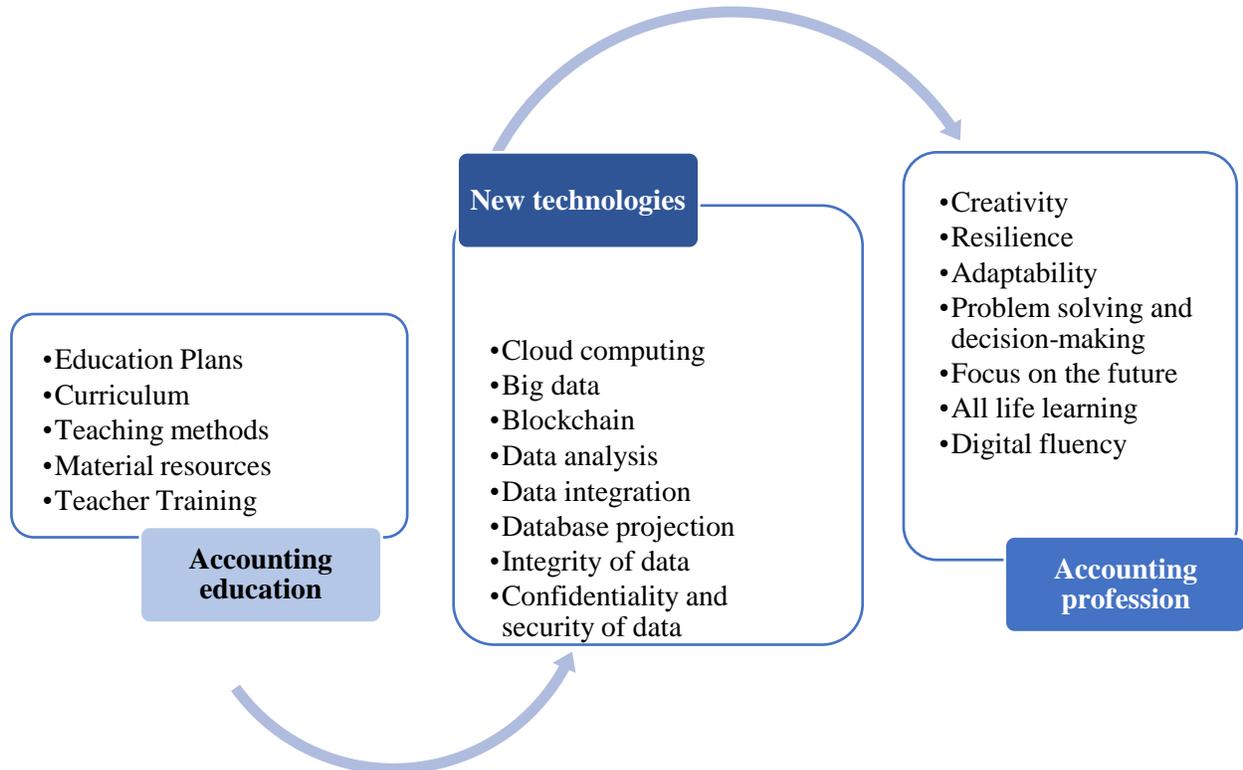
International professional organisations play an active role in developing and supporting their members in order to accept new technologies in a data-driven world and to use information effectively. The concept of *the future ready accountant* or *the future ready accounting profession* has been advanced by IFAC (the International Federation of Accountants) in 2019 and rapidly embraced as a current demand. In the same context, in 2019, the International Accounting Education Standards Board™ has elaborated the international standards of education for professional accountings. In order to develop advanced digital skills, actions such as those adopted at EU level have been developed and implemented, namely the *Digital Europe Program* and the *Updated Action Plan for Digital Education*, which contribute to the implementation of technologies in economics and sharing of the best practices.

## **National perspectives on accounting education in pre-university education**

In response to all these international and European perspectives on education, the Ministry of Education continues the reforms in the field of education and training, in order to ensure an education adapted to the requirements of the labor market and focused on personal and social development. according to the Strategy\_VET 27.04.2016. Ongoing reforms in the field of national education aim, on the one hand, to restructure the school curriculum by revising the framework plan and curricula, and on



Frequent changes in the international economic environment have generated sustainable development as a global goal. Accomplishing this goal is an essential stage is the organization of sustainable education, which should ensure the increase of the professional insertion of the graduates:



**Fig. no. 2** New perspectives in the evolution of the accounting profession

*Source: own projection*

Sustainable pre-university training requires the permanent revision of the educational environment, of the curricula, of the teaching methods, of the material resources in parallel with the continuous training of the teachers. An economic pre-university education institution is sustainable if it manages to adapt to the changes in the medium and long term that may affect future professional accountants. It is, on the one hand, the new technologies that have invaded the accounting profession, and on the other hand, new skills such as creativity, resilience, adaptability, lifelong learning, digital fluency that are the prerogative of a future professional accountant.

In order to analyze the extent to which the pre-university economic environment contributes to the sustainable development of the skills of future accounting students and future practitioners, we analyzed the curricular offer of highschools and economic colleges in Romania, based on information published by them on their web pages. From a methodological point of view, the proposed research consists in conducting a collective case study, through which we aim to observe the phenomenon in the real context.(Cohen et al., 2000)and capturing as many aspects of the analyzed issue as possible. During this exploratory research the curriculum will be analyzed, the accounting curriculum, the professional training standards for professional qualification technician in economic activities, level 4 qualification, economic field and curriculum in local development, within the 42 economic high schools in the country. We need to mention that the selection and the ordering of the economic high schools was done according to the site(*BAC Plus — Top licee, 2021*)which publishes annually, starting

with 2014, the hierarchy of all highschools in the country, depending on the mean obtained at the baccalaureate exam by graduate students.

The aim of our research is to analyze the sustainability of training, which pre-university economic education offers to current and future graduates in the field of accounting through the issues addressed in the curriculum. The main objective of the paper is to identify the level of digital skills of students in pre-university economic education, a level that ensures an adequate and harmonious development, as a prerequisite for the use of modern accounting software and computer platforms and also for overcoming the obstacles and challenges of permanent digitization of the accounting field.

Through this research we will aim to answer the following questions:

- 1) What is the level of integration of the disciplines related to new technologies in the pre-university economic education plans in Romania?
- 2) What changes should the economic colleges consider in the future, in terms of the disciplines studied?

The analysis was conducted between September and October 2021 on the basis of the latest curriculum, by examining the compulsory and optional subjects. Thus, in order to identify the digital competences in the discipline/accounting module for the four years of economic highschool, we analyzed the revised curriculum for vocational and technical education, *the Standard of vocational training in specialized culture and practical training for economic vocational training*, the qualification of *technician in economic activities*, level 4, (according to Annex 4 to OMENSR no. 4121 from 13.06.2016). We need to mention that in pre-university economic education in Romania, there is not a definite qualification in the field of accounting. The economic highschool classes with the most accounting hours in the curriculum are the ones that have the qualification: technician in economic activities, for this reason these classes were the object of our research.

**Table no. 1**

Digital skills developed in highschool classes according to the Standard of professional training, professional qualification: technician in economic activities, level 4, field of professional training: economic

<b>Professional qualification: technician in economic activities, level 4, the field of professional training: economic</b>			
<b>IX<sup>th</sup> Grade</b> →	<b>X<sup>th</sup> Grade</b>	<b>XI<sup>th</sup> Grade</b> →	<b>XII<sup>th</sup> Grade</b>
<i>Module 1</i> <b>The bases of accounting</b>	<i>Module 2</i> <b>General Accounting</b>	<i>Module 3 Accounting</i> <i>Module 4</i> <b>Using the computer in accounting</b>	<i>Module 2</i> <b>Economic-financial analysis</b>
<b>Units of results for general technical and <u>specialized</u> learning according to the standard of professional training</b>			
Applying the basic concepts of accounting	Using accounting methods, procedures and principles	<b>Using the software in accounting</b> Recording economic-financial operations	Realization of financial statements

Key integrated competences			
<p><i>Basic skills in math, science and technology</i></p> <ul style="list-style-type: none"> <li>✓ Identify different types of equipment, software and documents specific to the accounting activity</li> <li>✓ Solving a series of problems in everyday situations based on reason, logical-mathematical structures and abstract thinking</li> </ul>	<p><i>Digital competences for using information technology as a learning and knowledge instrument</i></p> <ul style="list-style-type: none"> <li>✓ <b>Using accounting software for keeping a record of documents</b></li> </ul>	<p><i>Digital competences for using information technology as a learning and knowledge instrument</i></p> <ul style="list-style-type: none"> <li>✓ <b>Recording economic-financial operations in the accounting records based on a specialized software</b></li> </ul>	<p><i>Basic skills in math science and technology</i></p> <ul style="list-style-type: none"> <li>✓ Solving the problems regarding the elaboration of annual financial statements</li> <li>✓ Interpreting economic indicators – establishing provisional measures</li> </ul>

Source: authors' projection according to Annex 4 of the OMNESR no 4121 from 13.06.2016

The centralization of the results of the analysis reflected in table no. 1, highlights the fact that only in the 2<sup>nd</sup> and 3<sup>rd</sup> year of high school, digital skills are formed and developed in the accounting module, by using the accounting software to record documents and to record economic and financial operations in the accounting registers. ngc

### **Digital-accounting abilities. A desire for using technology in the future**

A significant share of the economic specialists believe that after 2025 the society will develop a distinct image from the current one regarding the role of accountant and accounting for the business environment, as a result of the integration of modern technology in the business environment (Melnyk et al., 2020). This aspect determines the direction of the present actions in order to ensure the evolution of the profession in a society marked by an accelerated change.

Structural changes in information and communication technology are part of the new normality of the accounting profession, from a dual perspective, that of the employee and of the employer (Rebele & St. Pierre, 2019). In this way, the employer's expectations are required to be designed within the learning programs of educational institutions, so that they contribute in shaping the digital profile of the student in order to be prepared for the labor market strongly influenced by the digital technologies and the modern instruments (Duncan-Howell, 2012, p. 827). Technological change is a central theme that shapes the identity of the professional accountant. ICT skills combined with communication skills, critical thinking and problem-solving skills help shape the graduate's success in the workplace. On this side, teachers must ensure that future graduates in the field of accounting have a solid foundation of specialized knowledge together with the ability to apply them based on the modern technological tools. (Daff, 2021) Thus, educational institutions can meet the need to accumulate the necessary skills for the professional accountant by reshaping the curriculum in order to incorporate the knowledge and applications of digital technologies in the accounting training programs (Banasik & Jubb, 2021).

International professional organizations play an active role in developing and supporting their members in order to accept new technologies in a data-driven world and to use information effectively. The concept of *being ready for the future* (*future ready accountant*) or *profession ready for the future* (*future ready accounting profession*) was advanced by IFAC (International Federation of Accountants)

in 2019 and quickly taken over as a current requirement. In the same context, in 2019, the International Accounting Education Standards Board™ developed the International Education Standards for Professional Accountants. In order to develop advanced digital skills, actions such as those adopted at the European Union level have been developed and implemented, namely the *Digital Europe Program* and the *Updated Digital Education Action Plan*, which contribute to the implementation of technologies in economics and sharing the best practices.

In order to maintain the relevance of the accounting field in relation to the level of evolution of the contemporary society, a series of adaptations are required at the curriculum level, incorporating native digital skills into the accounting curriculum and placing interest in technology training is imperative to direct the graduate towards the path of progress (Al-Htaybat et al., 2018).

The key premises for the employment of accounting graduates on the labor market are identified in terms of skills related to contemporary reality such as teamwork, time management, problem-solving ability, interpersonal skills. etc. (Tsiligiris & Bowyer, 2021). In order to align the accounting profession and education with the modern standards, the accounting training programs must be based on the emerging technologies, as well as the assimilation of aspects related to the deepening of statistical knowledge, data analysis and the acquisition of programming skills. Thus, a paradigm shift that incorporates a range of innovative skills is needed to be targeted in the design of the curriculum. (Al-Htaybat et al., 2018). Based on these changes, the accounting programs integrate the development of digital and intellectual technological skills, communication, teamwork, and leadership skills into their programs in line with the profession's expectations for future-ready accounting, and, if so, do these skills relate to and reflect in the unit the learning outcomes with the skills of the graduates? (Banasik & Jubb, 2021, p. 2).

The guiding marks for shaping digital competencies based on the specialized literature are identified at the level of international resources found through WOS based on the search criteria found in the table below:

**Table no. 2**

Guiding marks for the bibliometric research

Source:	WOS <a href="https://www.webofscience.com/wos/woscc/summary/06aeded9-cde5-4174-95e0-34295cc182bd-145b7939/times-cited-descending/1">https://www.webofscience.com/wos/woscc/summary/06aeded9-cde5-4174-95e0-34295cc182bd-145b7939/times-cited-descending/1</a>
Search after:	((ALL=(digital)) AND ALL=(skills)) AND ALL=(accounting)
WOS categories:	Economics, Business, Business Finance, Management
Period:	2010-2021
Document type:	Articles, Proceedings papers, Early access, Book chapter, Review articles
Language:	English

Therefore, the main competencies assigned to the accounting profession with resonance for its future are systematized in the table below:

**Table no. 3**

The profile of the professional accountant in terms of skills imposed by the modern society

<b>Crt nr..</b>	<b>The skills of the professional accountant imposed by the modern society</b>	<b>Reference</b>
1.	Ability to analyze and visualize data, skills to manage modern tools such as AI, CC, Blockchain, Big Data	(Moll & Yigitbasioglu, 2019)
2.	Classic skills and innovative skills-skills related to the new standards, practices and modern technologies, analytical skills modeled by the creation of advanced digital media, technological skills, business automation skills, communication skills	(Al-Htaybat et al., 2018)
3.	External and internal technical skills, management of the digital technology skills	(Cassetta et al., 2020)
4.	Technical and analytical skills, the ability to assess the effectiveness of IT tools applicable to the accounting field	(Lois et al., 2020)
5.	Specific skills for managing online business environments based on advanced programming languages and calculations, augmented accounting practices	(Al-Htaybat et al., 2019)
6.	Skills for data analysis tasks, communication skills, data modeling skills, knowledge of statistics and programming, human-computer-interaction skills	(Oesterreich et al., 2019)
7.	Business analysis skills and skills in information technology, knowledge in data analysis and programming, analytical skills to identify correlations, knowledge of statistics and general programming languages, communication skills, skills in using software such as SAP, CRM, Excel, SQL, Power Point, ERP,	(Oesterreich & Teuteberg, 2019)
8.	Artificial intelligence and machine learning skills	(Abdulquadri et al., 2021)
9.	Skills in exploring new digital trends, skills in implementing innovative IT applications and services, the ability to innovate in the field of business models and promote change	(Audretsch & Belitski, 2021)
10.	Digital skills, communication skills, teamwork skills, management skills, critical thinking skills, data analysis skills	(Banasik & Jubb, 2021)
11.	Business analysis skills, information technology skills, programming language skills, business communication skills, statistical knowledge, modern technology management and data analysis skills	(Oesterreich & Teuteberg, 2019)
12.	Technical skills that enable the ability to program artificial intelligence, data analysis, advanced digital skills	(Betti & Sarens, 2021)
13.	General knowledge of information technology, knowledge of information technology control skills, ability to use information technology in the workplace, creative skills	(Zhyvets, 2018)

	and development of imagination, communication skills, critical thinking	
14.	Technology-related skills, technical skills that support the digital journey of the field, multidisciplinary skills, skills related to RPA (Robotic Process Automation), skills such as data management, knowledge of data programming, knowledge of statistics	(Kokina et al., 2021)

Source: Vos Core Collection

According to current studies, the lack of specific skills and insufficient qualification of employees are recognized as major barriers to the adoption of modern information technologies in the context of industry 4.0. (Betti & Sarens, 2021; Oesterreich et al., 2019).

Despite the massive automation of the accounting field, economics graduates say that only 45% of their skills and competencies are based on the current requirements of an automated accounting job. In this way, the education and continuing education of accountants must be at the heart of the ongoing optimization of digital skills (Zhyvets, 2018).

Employers in the economic field shift their interest to graduates with much broader skills than the technical accounting expertise.(Kokina et al., 2021).

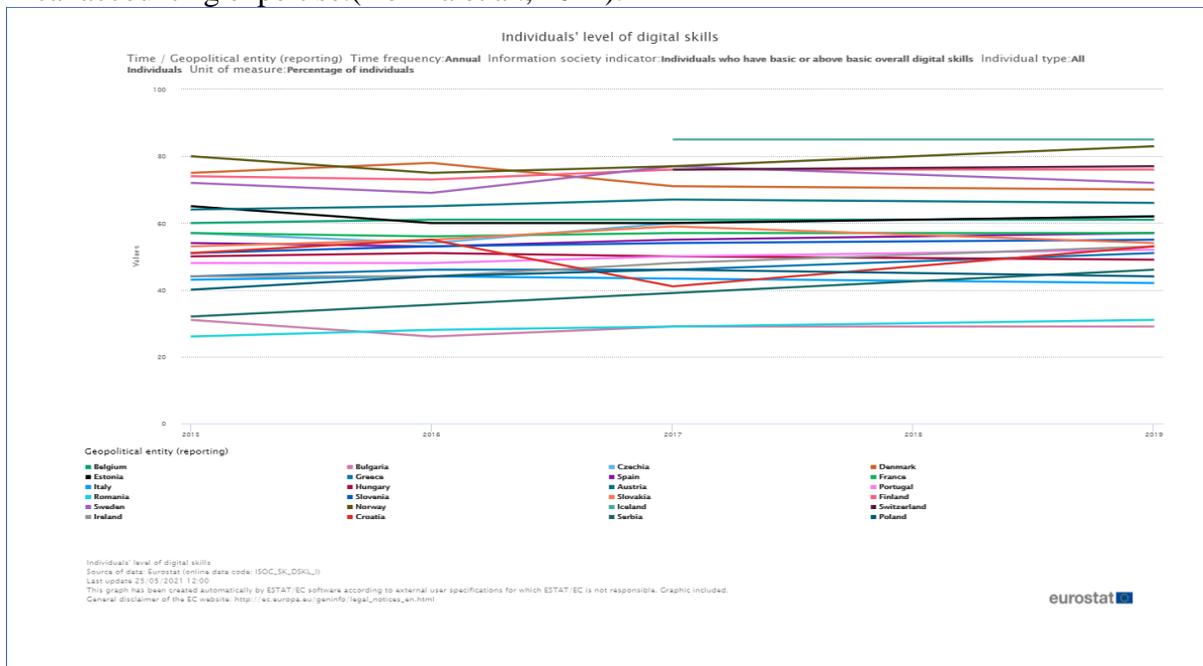
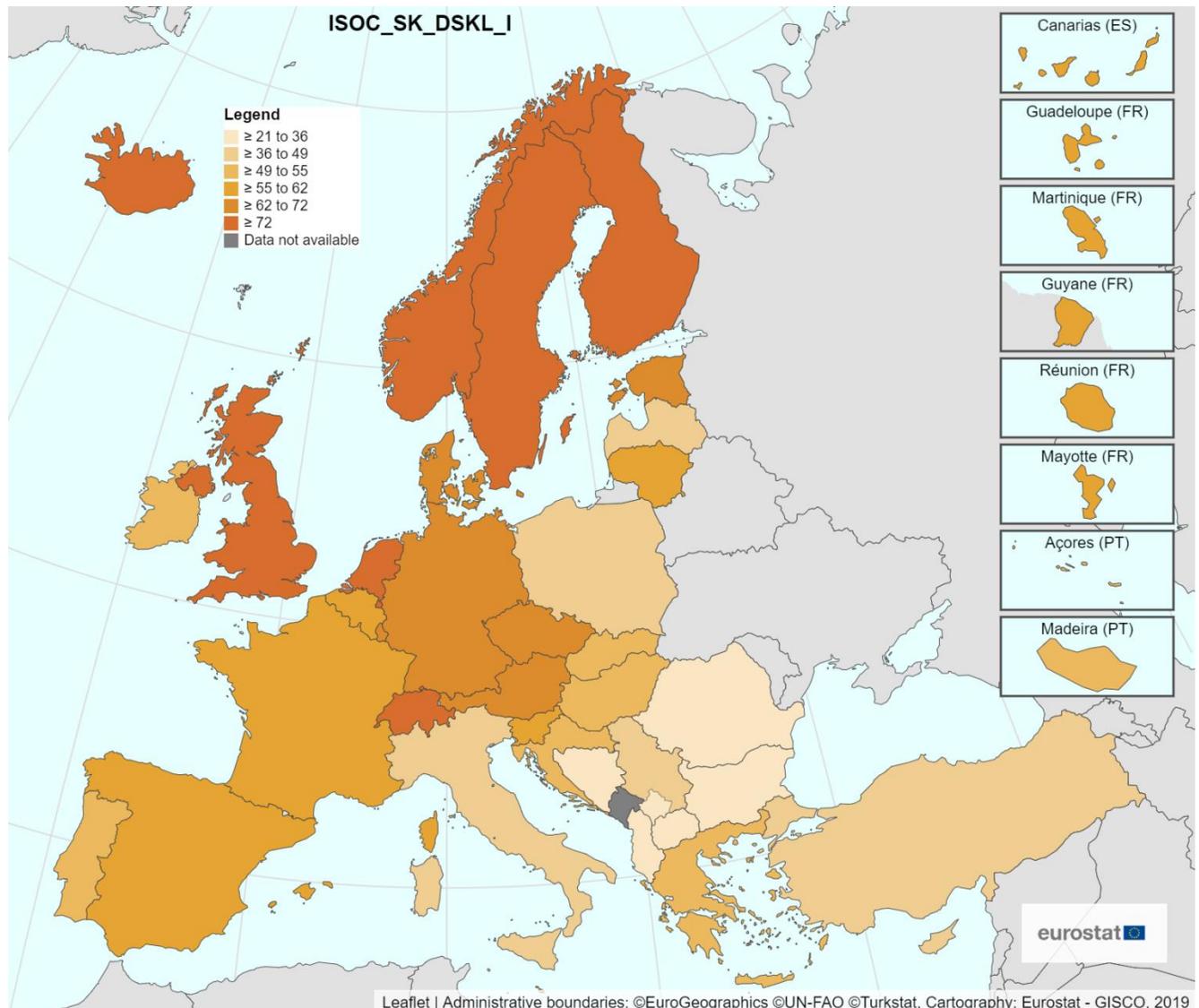


Chart no.1 Digital skills at the level of European countries

Source: Eurostat site, available at:

[https://ec.europa.eu/eurostat/databrowser/view/ISOC\\_SK\\_DSKL\\_I/default/bar?lang=en](https://ec.europa.eu/eurostat/databrowser/view/ISOC_SK_DSKL_I/default/bar?lang=en), accessed on october 2021.

According to the previous graph, the countries with the highest share of the population with basic digital skills or above the basic level are represented by Iceland - with a percentage of 85% registered in 2019, Norway - 83% and the Netherlands - 79%, the occupants the first three positions, followed by Switzerland and Finland. Albania ranks last with a share of 21% of the population with digital skills, Bosnia and Herzegovina-24% and Kosovo-28%. The issues highlighted above can also be viewed via the following map:



**Chart no. 2** Mapping digital skills in Europe

*Source: (EUROSTAT-Individual' level of digital skills (until 2019), 2019)*

Accounting professionals are forced to meet increasingly complex requirements, complementary to those related to the conceptual aspects of the financial-accounting field, technical skills, digital intelligence, interpersonal behavior, skills and qualities being reflected in coefficients for creativity, emotional intelligence and vision. (*Professional accountants - the future: drivers of change and future skills* / ACCA Global, 2016).

### **Results and discussions**

In order to ensure an optimal level of training for future professional accountants, we consider that the harmonization of the accounting curriculum with the current and future needs of the accounting profession in the field of the use of new information technologies is an objective that must be achieved. But this goal is coupled with significant investment in IT resources, which is an important constraint on pre-university education. In this sense, the change can be produced by integrating in the curricula the disciplines related to the technologies that change the accounting profession. However, we are aware that the development and extension of the accounting curriculum must be accompanied by adequate training for teachers in the field of IT and new technologies that are invading the accounting space, leading to changes in the accounting and reporting processes. Therefore, in the future accounting training we will have a dual approach (Stanciu & Rîndașu, 2020): acquiring the necessary knowledge and practical skills in the field of accounting through the use of new technologies.

A possibility to integrate new technologies in accounting education can be achieved through the Local Development Curriculum, the LDCs. Thus, another direction of the research was the identification in the curricular offer of each economic college, of the curriculum in local development, chosen by the economic highschoools in the school year 2020-2021. *The local development curriculum* (LDC) is the curricular offer specific to each educational unit and is developed in partnership with economic operators or partner public institutions of the educational unit. This curricular offer provides the necessary framework for adapting students' professional training to the requirements of the local and/or regional labor market. According to the annex to the MNE Order no. 3502 of 29.03.2018 regarding the approval of the General Methodological Guidelines for the elaboration of the curriculum in local development (LDC) for the 11<sup>th</sup> and 12<sup>th</sup> grades, the upper cycle of high school, the technological chain, the design of the curriculum in local development is determined by two fundamental purposes, specific to the development of the curriculum in vocational and technical education:

- acquisition, by the graduates, of the learning outcomes necessary for the adaptation in the present and especially in the future to the requirements of a labor market in a continuous and rapid change;
- acquisition, by the graduates, of those transferable competencies (soft skills) necessary for the social integration, as well as for the fast and successful integration on the labor market;

The training of students through LDCs is carried out through the specialized culture classes (in the 11<sup>th</sup> and 12<sup>th</sup> grades, the upper cycle of high school).

We examined the curricular offer made available by the economic colleges on the web pages, according to annex 1. From the 42 economic colleges that prepare a number of 120 classes/per level of studies, in the specialization technician in economic activities, only 11 publish on the site the name of the chosen LDCs, 2 high schools did not have a website, and for a high school the site was in operation. Thus, a limitation of this study is the fact that only data that could be collected directly from the website of each school were taken into account in this analysis. After examining the names of the

published LDCs, we came to the conclusion that no LDC chosen and taught in the school year 2020 - 2021, does not address the new digital technologies.

Consequently, in order to answer the first question posed in the methodological framework, we can say that, at the time of this research, they were not identified in the high school curriculum (economics, technical specialization in economic activities) developed based on the standard of training, nor in the CDLs chosen by the economic colleges for the school year 2020 - 2021, competencies regarding the new digital technologies. At present, we consider that there is no significant negative impact on the ability of economic high school graduates to successfully pursue economic studies or to enter the labor market. In the medium term, this result may change if curricula are not revised in line with the requirements of the business community and international professional bodies.

In order to be able to provide a sustainable education of pre-university economic education, it is necessary to initiate and promote an active dialogue with the university environment, the labor market and vocational training bodies, in order to improve the insertion capacity of graduates, both in academia and in the professional one. Otherwise, future accounting graduates will not be able to be well enough prepared to face the professional challenges in the age of information technology. The answer to the second research question is complemented by the curricular policies proposed by the Ministry of Education starting with the 2020-2021 school year, which according to the website (Eurydice, 2021) continues the reforms in the field of education and training, in order to ensure a education adapted to the requirements of the labor market and focused on personal and social development, with a positive impact on preventing and combating early school leaving. According to the Ministry of Education's report to the European Commission, through the Eurydice project, the curriculum review will place greater emphasis on the development of transversal skills, including digital skills, sustainable development skills and socio-emotional skills.

Frequent changes in the international economic environment have generated sustainable development as a global goal. In its realization an essential stage is the organization of sustainable education, which should ensure the increase of the professional insertion of the graduates. Thus, we consider that the sustainable pre-university training requires the permanent revision of the educational environment, of the curricula, of the curriculum, of the teaching methods and last but not least, the continuous training of the teachers. A pre-university education institution is sustainable insofar as it manages to develop a holistic perspective in order to react in a timely manner in relation to the medium and long-term changes that may affect future professional accountants (Stanciu, V., Rîndașu, SM. , 2020). In our opinion, the main challenge for the training of future professional accountants is their ability to make effective use of current IT solutions for financial and non-financial data processing.

In this sense, it is desirable for economic high schools to constantly assess the main challenges of the business environment and to align their strategy with the requirements of the profession in a continuous dynamic. Certainly, a long-term vision of pre-university accounting education is needed, focusing on the development of new accounting skills, beyond the traditional ones.

### **Conclusions and research directions**

The results obtained from this collective case study highlighted the fact that, at present, the pre-university economic environment has not introduced in the curricula disciplines/modules related to emerging technologies. Digital skills in the use of accounting software have been identified in the accounting modules, which are an important premise for the integration of new technologies in the near future. We consider that an important first step in increasing the sustainability of economic colleges is to improve the dialogue between the pre-university environment, the academic environment, the

business environment and professional bodies. An essential aspect in this context is the continuous training of teachers to be able to effectively train students on emerging technologies and their use in the accounting processes. A limitation of the research is given by the lack of transparency of pre-university education institutions regarding the publication on the site of the curricular offer, school action plans (SAP) from 42 highschools analyzed, only for 11 it was possible to identify the modules established in the Curriculum in local decision.

In the context of the impact of new digital technologies in accounting, this research contributes to the specialized literature on the sustainability of the pre-university economic environment in Romania, the literature being limited to this field of study. In the Romanian specialized literature, this is the first study that addresses the analysis of the sustainability of pre-university accounting education from the perspective of the emerging information technologies. As future research directions, we intend to extend our research to the analysis of the level of training of teachers to meet the challenges of digitization in practice and the identification of software used by teachers in the development of digitized skills in the module *General Accounting* and the module *Using the software in accounting*. We are also concerned, on the one hand, to study the perception of employers regarding the level of education of students in this segment and the percentage of employment of students in the economic field, after graduating high school, and on the other hand, establishing the share of high school graduates. economics that by continuing their studies have the opportunity to accumulate digital skills that are required by the labor market. According to current studies, the lack of specific skills and insufficient qualification of employees are recognized as major barriers to the adoption of modern information technologies in the context of Industry 4.0 (Betti & Sarens, 2021; Oesterreich et al., 2019) Among the core competencies required by contemporary society there are: the ability to analyze and visualize data, skills to manage modern tools such as AI, CC, Blockchain, Big Data, business analytics skills, information technology skills, programming language skills, communication skills in the business environment, statistical knowledge, skills in modern technology management and data analysis etc.

Despite the massive automation of the accounting field, economics graduates say that only 45% of their skills and competencies are based on the current requirements of an automated accounting job. In this way, the education and continuing education of accountants must be at the heart of the ongoing optimization of digital skills. (Zhyvets, 2018)

In this regard, teachers must ensure that future graduates in the field of accounting have a solid foundation of expertise along with the ability to apply them on the basis of modern technological instruments. (Daff, 2021) Thus, educational institutions can meet the need to accumulate the necessary skills for the professional accountant by reshaping the curriculum in order to incorporate the knowledge and applications of digital technologies in accounting training programs. (Banasik & Jubb, 2021)

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## Annex 1

Identification data regarding the economic high schools in Romania and the local development curriculum (LDC) on the new technologies, for the school year 2020 - 2021

Crt No.	Name of the highschool	site	Mean bac 2021/ in a highschool	Numberof classes for qualification tehnician in economicactivities on the level	LDC - with the theme related to new technologies, in the school year 2020 - 2021
1	EconomicHigh School "V. Madgearu" Bucharest	<a href="http://www.madgearu.ro/">http://www.madgearu.ro/</a>	8,70	9 classes	X
2	Comercial Superior School "Nicolae Kretzulescu" Bucharest	<a href="http://www.kretzulescu.ro">http://www.kretzulescu.ro</a>	8,56	5 classes	X
3	Economic High School "Iulian Pop" Cluj-Napoca	<a href="https://colegiuleconomic-cluj.ro/">https://colegiuleconomic-cluj.ro/</a>	8,33	2 classes	X
4	EconomicHigh School "Virgil	<a href="http://cevmpl.ro/">http://cevmpl.ro/</a>	8,18	3 classes	X

	Madgearu", Ploiești county				
5	Economic High School "Mihail Kogălniceanu" Focșani	<a href="https://cemk-focsani.coresi20.ro/">https://cemk-focsani.coresi20.ro/</a>	8,09	3 classes	Not published on the site
6	Economic Administrative High School, Iași	<a href="https://www.colegiul-economic.ro/">https://www.colegiul-economic.ro/</a>	7,99	Not functioning site	-
7	Economic High School "Dionisie Pop Marțian" Alba Iulia	<a href="https://www.colegiul-economicdpm.ro/">https://www.colegiul-economicdpm.ro/</a>	7,98	2 classes	X
8	Economic High School "A.D. Xenopol"	<a href="https://colegiulxenopol.ro/">https://colegiulxenopol.ro/</a>	7,82	6 classes	Not published on the site
9	Economic High School "Octav Onicescu" Botoșani	<a href="https://ceobt.ro/">https://ceobt.ro/</a>	7,77	3 classes	X
10	Economic High School "Costin C. Kirițescu"	<a href="https://kiritescu.ro/">https://kiritescu.ro/</a>	7,7	4 classes	Not published on the site
11	Economic High School "Francesco Saverio Nitti" Timișoara	<a href="https://www.fsnitti.ro/">https://www.fsnitti.ro/</a>	7,67	4 classes	Not published on the site
12	Economic High School "Ion Ghica" Târgoviște	<a href="https://ceigt.wordpress.com/">https://ceigt.wordpress.com/</a>	7,58	5 classes	X
13	Economic High School Buzău county	<a href="http://www.economic-buzau.ro/">http://www.economic-buzau.ro/</a>	7,58	5 classes	Not published on the site
14	Economic High School "Virgil Madgearu", Galați	<a href="https://www.cevmg.ro/">https://www.cevmg.ro/</a>	7,51	3 classes	Not published on the site
15	Economic High School "Nicolae Titulescu" Baia Mare	<a href="https://www.colegiultitulescu.ro/">https://www.colegiultitulescu.ro/</a>	7,49	4 classes	Not published on the site
16	Economic High School "Transilvania" Târgu Mureș	<a href="https://www.colecotransilvaniatgm.ro/">https://www.colecotransilvaniatgm.ro/</a>	7,44	2 classes	Not published on the site
17	Economic High School "Virgil Madgearu" Tg-Jiu	<a href="https://cevm.ro/">https://cevm.ro/</a>	7,43	2 classes	Not published on the site
18	Tehnologic Economic High School "Virgil Madgearu", Iași	<a href="http://economic2.ro/">http://economic2.ro/</a>	7,42	2 classes	Not published on the site
19	Economic High School "Maria Teiuleanu" Pitești	<a href="http://ecopit.eu/">http://ecopit.eu/</a>	7,40	5 classes	Not published on the site
20	Economic High School "Dimitrie Cantemir" Suceava	<a href="http://master.cedcsv.ro/cedc/">http://master.cedcsv.ro/cedc/</a>	7,30	5 classes	Not published on the site
21	Economic High School Arad	<a href="http://www.colecoara.ro/">http://www.colecoara.ro/</a>	7,19	3 classes	Not published on the site
22	National Economic High School "Andrei Bârseanu" Brașov	<a href="https://cneab.ro/ro/">https://cneab.ro/ro/</a>	7,09	2 classes	Not published on the site
23	Economic High School "Anghel Rugina", Mun. Vaslui	<a href="https://colegiuleconomicanghelrugina.wordpress.com/">https://colegiuleconomicanghelrugina.wordpress.com/</a>	7,03	4 classes	Not published on the site
24	Economic High School "Ion Ghica" Brăila	<a href="http://ceig.ro/">http://ceig.ro/</a>	6,97	Not on the site	Not published on the site
25	Economic High School "Hermes" Bucharest	<a href="http://colegiulechermesbuc.hi2.ro/">http://colegiulechermesbuc.hi2.ro/</a>	6,91	Not on the site	Not published on the site
26	Economic High School "Delta Dunării" Tulcea	<a href="http://colegiuldeltadunarii.ro/">http://colegiuldeltadunarii.ro/</a>	6,84	2 classes	X
27	Economic High	<a href="http://www.colegiule">http://www.colegiule</a>	6,74	5 classes	Not published on

	School "Partenie Cosma" Oradea	conomicoradea.ro			the site
28	Economic High School "Ion Ghica" Bacău	<a href="http://www.colegiuleconomicbacau.ro">http://www.colegiuleconomicbacau.ro</a>	6,48	4 classes	Not published on the site
29	Economic High School "Gheorghe Dragoș" Satu Mare	<a href="https://colegiulgheorghedragos.ro/">https://colegiulgheorghedragos.ro/</a>	6,47	-	Not published on the site
30	Economic High School "Berde Aron" Sfântu Gheorghe	<a href="https://www.lec.educv.ro/">https://www.lec.educv.ro/</a>	6,26	0 classes	Not published on the site
31	Economic High School Călărași	<a href="http://www.economiccalarasi.ro/">http://www.economiccalarasi.ro/</a>	6,25	2 classes	Not published on the site
32	Economic High School, Rm. Vâlcea	<a href="https://sites.google.com/colegiuleconomicv1.ro/economic">https://sites.google.com/colegiuleconomicv1.ro/economic</a>	6,19	1 class	X
33	Economic High School Mangalia	No site	6,14	-	-
34	Economic High School "Pintea Viteazul" Cavnic	<a href="https://colegiul-pintea.wixsite.com/home">https://colegiul-pintea.wixsite.com/home</a>	6,05	0 classes	-
35	Economic High School "Emanuil Gojdu" Hunedoara	<a href="https://egojdu.wordpress.com/">https://egojdu.wordpress.com/</a>	6,01	Not published on the site	Not published on the site
36	National Economic High School "Theodor Costescu"	<a href="https://www.costescu.ro">https://www.costescu.ro</a>	5,83	3 classes	Not published on the site
37	Economic High School Al Banatului Montan Reșița	<a href="http://colegiulmontan.ucoz.com/">http://colegiulmontan.ucoz.com/</a>	5,82	0 classes	-
38	Economic High School "Virgil Madgearu" Constanta	<a href="https://www.vmadgearucta.ro">https://www.vmadgearucta.ro</a>	5,82	1 class	X
39	Economic High School "Gheorghe Chițu" Craiova	<a href="http://www.cnegchitu.ro/">http://www.cnegchitu.ro/</a>	5,55	4 classes	Not published on the site
40	Economic High School "Viilor"	<a href="https://colegiulviilor.ro/">https://colegiulviilor.ro/</a>	5,55	4 classes	Not published on the site
41	Economic High School "Hermes" Petroșani	<a href="https://www.colegiul-hermes-petrosani.ro/">https://www.colegiul-hermes-petrosani.ro/</a>	5,22	1 class	Not published on the site
42	Economic High School Năsăud	<a href="http://economicnasau.d.eu/">http://economicnasau.d.eu/</a>	5,08	2 classes	X

Source: authors' projection based on the data collection

Note: High school ranking according to the bacalaureat exam mean, collected from the site <https://bacplus.ro/>