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METHODS FOR STORING AND FINDING DATA IN THE BUSINESS LOGIC FOR ECONOMIC APPLICATIONS

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Abstract: *The paper presents the methods for storing and finding data in the business logic for economic applications. Along with the definition of the business strategy, it is necessary to define the strategy of the information system and this because the IT system supports the managers, through the information provided, in the management and control activity in order to achieve the strategic objectives of the organization, IT systems are open and flexible, constantly adapting to the imposed requirements the dynamic environment in which the company operates, promoting IT solutions supports the organization in consolidating and developing the business (eg: electronic commerce, e-banking, etc.), the computer system provides the necessary information to control the fulfillment and adaptation of the plans operational and strategic aspects of the organization, the organization must know and control the risks related to the implementation of the new ones technologies and adaptation of the computer system to the new requirements, establishing standards at the level of the information system that are meant to specify the hardware and software features and performance of the components to be purchased and what methodologies are to be used in the development of the system. Storing and finding data is an important action for the IT system in the role to provide fast and secure informations that are used in business logic and flow available to managers for the decision-making process. The methods include complex algorithms and the reason of these is to get fast responses at different types of queries embedded in specific modules of an economic application.*

Keywords: *management and control activity, solutions supports, data structures, data graphs, data trees, economical data, information processes, business flows, application modules*

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

1. Introduction

The management domains correspond to each of the homogeneous activities carried out within the company - research-development, commercial, production, personnel, financial-accounting - taking into account the interactions between them. Moreover, the approach of these fields is made in a hierarchical vision leading to the identification of the following levels:

– Transactional in which elementary operations are performed;
– Operational where current operations are carried out, the decisions taken at this level are current, by routine;
– Tactical corresponding to control activities and short-term decisions;
– Strategic characteristic of long-term decisions and / or that globally engage the company.

Management information systems are defined in the business world, following two approaches:

a) starting from the information and its support;
b) starting from the function that the management information system must perform.

• in the first case, the management information systems represent the set of information used within the company, of the means and procedures of identification, collection, storage and processing of information (Crysup et al., 2019; Jansson, 2019).

• in the second approach of defining the management information systems, it starts from its purpose, namely to provide the information requested by the user in the desired form and at the appropriate time in order to substantiate decisions.

Management information systems (GIS) involve the definition of: management domains, data, models, management rules.

Data is the „raw material" of any management system. All data transmitted and processed are taken into account regardless of their nature, their formal or informal nature or the media on which they are located (Erciyes, 2021; Harish, 2020).

2. Binary search trees for data in applications

Finding certain information or pieces of information from a large volume of previously stored / stored data is a fundamental operation, called searching, of most computer applications. The data is organized as items or items each with a key that is used in the search. The purpose of the search is to find items that have keys that match the search key.

The purpose of the search is to access the information in the article for processing.

Search - Definition: A symbol table is a data structure that supports two basic operations: inserting a new item and returning an item with a given key. Symbol tables are also called dictionaries by analogy with the secular system of giving definitions of words by listing them alphabetically in a reference book:

- the keys are the words
- articles are records associated with words and contain definition, pronunciation and etymology.

The advantages of symbol tables on the computer:
– have efficient search algorithms,
– efficient insertion operations,
– efficient deletion or modification operations,
– operations of combining 2 tables into one. Indispensable in organizing computer software: keys are symbolic names, and articles contain information that describes the named object (Khadda, 2020; Edappanavar, 2019).

Operations for binary search trees:
– Insert a new item.
– Search for an item / items with a given key.
– Delete a specified item.
– Select the k-th item in a symbol table.
– Sort symbol table (visit all items in order of keys)
– Join two symbol tables

Other operations:
– Initialize
– Test ifempty
– Destroy
– Copy

TAD Symbol table

– Void STinit (int); int STcount (); void STinsert (Item);
– Item STsearch (Key); void STdelete (Item);
– Item STselect (int); void STsort (void (* visit) (Item));
– TAD interface Symbol table

A Binary Search Tree (BST) is a binary tree that has a key associated with each of its internal nodes, with the added property that the key of each node is greater than or equal to the keys in all nodes of its left subtree and more small or equal to the keys in all nodes of its right subtree.

```
#include <stdlib.h>
#include "Item.h"
typedef struct STnode* link;
struct STnode { Item item; link l, r; int N; };
static link head, z;
link NEW(Item item, link l, link r, int N)
{ link x = malloc(sizeof *x);
 x->item = item; x->l = l; x->r = r; x->N = N;
 return x;
}
void STinit()
{ head = (z = NEW(NULLitem, 0, 0, 0)); }
int STcount() { return head->N; }
Item searchR(link h, Key v) //search in BST
{ Key t =  key(h->item);
  if (h == z) return NULLitem;
  if eq(v, t) return h->item;
  if less(v, t) return searchR(h->l, v);
  else return searchR(h->r, v);
}
Item STsearch(Key v)
 { return searchR(head, v); }
link insertR(link h, Item item) //insert in BST
 { Key v = key(item), t = key(h->item);
   if (h == z) return NEW(item, z, z, 1);
   if less(v, t)
         h->l = insertR(h->l, item);
    else h->r = insertR(h->r, item);
    (h->N)++; return h;
  }
 void STinsert(Item item)
 { head = insertR(head, item); }
```

Symbol table implemented with binary search tree

We define the successor of a node x, the node y with the lowest value of the key but with key [y] ≥ key [x] We define the predecessor of a node x, the node y with the highest value of the key but with key [y] - key [x]

```
link rotR(link h)
{
      link x =  h->l; h->l = x->r; x->r = h;    return x;
}
      link rotL(link h)
{
      link x = h->r; h->r x->l; x->l = h;  return x;
}
```

These two routines perform the rotation operation in a BST tree. A right rotation makes the old root the right tree of the new root (the old left subtree of the root); the rotation to the left makes the old root the left subtree of the new root.

– The search requires on average about 2lnN ~ 1.39lnN comparisons in a binary search tree formed with N random keys.
– Unsuccessful insertion and search requires on average about 2lnN ~ 1.39lnN comparisons in a binary search tree formed with N random keys.
– In the worst case, a search in a binary tree of search with N keys requires N comparisons.

By traversing BST

```
void sortR (link h, void (* visit) (Item))

{
if (h == z) return;
 sortR (h-> l, visit);
 visit (h-> item); sortR (h-> r, visit);
 } void STsort (void (* visit) (Item)) {
   sortR (head, visit);
}
```

Sort with binary search tree

3. Methods for traversing Graphs that contain data

Graphs are useful for modeling various problems and are implemented in multiple practical applications:

- Computer networks
- Web pages
- Social networks
- Road maps
- Graphic modeling

The graph can be modeled as a pair of sets G = (V, E). The set V contains the vertices, and the set E contains the edges, each edge establishing a neighborhood relationship between two nodes. A wide variety of problems are modeled using graphs, and solving them involves exploring space. A traversal aims to discuss each node of the graph, exactly once, starting from a chosen node, hereinafter called the source node.

The memory representation of graphs is usually done with adjacent lists or adjacent matrices. However, other data structures can be used, for example a pair map << source, destination>, cost>.

During the running of the traversal algorithms, a node can have 3 colors:

- White = undiscovered
- Gray = has been discovered and is being processed
- Black = was processed

An analogy can be made with a black spot that extends over a white space. The gray knots are on the border of the black spot. Scrolling algorithms can be characterized by completeness and optimality. A complete exploration algorithm will always find a solution, if the problem accepts the solution. An optimal exploration algorithm will discover the optimal solution to the problem from the perspective of the number of steps to be performed (Khuller, 2021; Watanobe et al., 2020).

Breadth-first Search (BFS) is a graphical search algorithm in which, when reaching an unvisited node v, all unvisited nodes adjacent to v are visited, then all unvisited peaks adjacent to the peaks. adjacent to v, etc.

BFS depends on the start node. Starting from a node, only the connected component of which it is part will be traversed. For graphs with several connected components, several covering trees will be obtained.

Following the application of the BFS algorithm on each connected component of the graph, a coverage tree is obtained (by eliminating the edges that we do not use when traversing). In order to be able to reconstruct this tree, the identity of its parent is kept for each given node. If there is no cost function associated with the edges, BFS will also determine the minimum paths from the root to any node (Crysup et al., 2019; Harish, 2020).

A queue is used to implement BFS. When added to the queue, a knot should be colored gray (it has been discovered and is to be processed).

The BFS exploration algorithm is complete and optimal.

Algorithm:

```
BFS (s, G) {
foreach (u in V) {
p (u) = null; // initialization
dist (s, u) = inf;
c (u) = white;
}
dist (s) = 0; // the distance to the source is 0
c (s) = gray; // we start processing the node, so the color
turns gray
Q = (); // use a queue with the nodes to be processed
Q = Q + s; // add the source to the queue
while (! empty (Q)) {// how long do I have nodes to process
u = top (Q); // determine the node at the top of the queue
foreach v in succs (u) {// for all neighbors
if (c (v) = white) {// node not found, not in queue
```

```
// update the data structure
dist (v) = dist (u) + 1;
p (v) = u;
c (v) = gray;
Q = Q + v;
} // close if
      } // close foreach
      c (u) = black; // I finished processing the current node
      Q = Q - u; // the node is removed from the queue
      } // close while
      }
```

Complexity:

- with list: O (| E | + | V |)
- with matrix: O (| V | 2)

Depth-First Search (DFS) starts from a given node (start node), which is marked as being processed. The first unvisited neighbor of this node is chosen, it is also marked as being processed, then the first unvisited neighbor is also searched for this neighbor, and so on. When the current node no longer has unvisited neighbors, it is marked as already processed and returns to the previous node. The first unvisited neighbor is searched for this node. The algorithm repeats until all nodes of the graph have been processed (Erciyes, 2021; Edappanavar, 2019).

Following the application of the DFS algorithm on each connected component of the graph, a covering shaft is obtained for each of them (by eliminating the edges that we do not use when traversing). In order to be able to reconstruct this tree, we keep the identity of its parent for each given node. For each node we will remember:

- time of discovery
- completion time
- the parent
- color

The DFS exploration algorithm is neither complete (in case of a search on an infinite subtree), nor optimal (it does not find the node with the minimum depth) (Khadda, 2020; Watanobe et al., 2020). Unlike BFS, a stack (LIFO approach instead of FIFO) is used to implement DFS. Although this replacement can be made in the above algorithm, it is often more intuitive to use recusivity.

Algorithm:

```
DFS (G) {
V = nodes (G)
```

```
foreach (u in V) {
// initialize the data structure
c (u) = white;
p (u) = null;
}
time = 0; // keep the distance from the root to the current node
foreach (u in V)
if (c (u) = white) explore (u); // explore the node
}
explore {u
d (u) = time ++; // node discovery time u
c (u) = gray; // node being explored
foreach (v in success (u)) // I try to process the neighbors
if (c (v) = white) {// if they have not already been processed
p (v) = u;
exploration (v);
}
c (u) = black; // I finished processing the current node
f (u) = time ++; // node completion time u
}
```

Complexity:

- with list: O (| E | + | V |)
- with matrix: O (| V | 2)

Giving an acyclic oriented graph, the topological sorting achieves a linear arrangement of the nodes according to the edges between them. The orientation of the edges corresponds to an order relation from the source node to the destination node. Thus, if (u, v) is one of the edges of the graph, u must appear before v in a row. If the graph were cyclic, there could be no such sequence (no order can be established between the nodes that make up a cycle).

Topological sorting can also be seen as the placement of nodes along a horizontal line so that all edges are directed from left to right (Harish, 2020; Khadda, 2020).

(a) Each muche (u, v) means that the garment u must be dressed before the garment v. The discovery times d (u) and completion times f (u) obtained after traversing the DFS are noted next to the nodes.

(b) The same graph, sorted topologically. Its nodes are arranged from left to right in descending order of f (u). Notice that all edges are oriented from left to right. Now Trudy can dress quietly.

Algorithm:

There are two known algorithms for topological sorting.

DFS-based algorithm:

- DFS traversal to determine times
- descending sorting depending on the completion time

Another algorithm is the one described by the following example:

```
SortM1 (G) {
V = nodes (G)
L = empty; // the list that will contain the sorted items
// initialize S with nodes that have no edges
foreach (u -> V)
if (u has no edges)
   S = S + u;
}
while (! empty (S)) {// how long do I have nodes to process
u = random (S); // remove a node from the set S
L = L + u; // add U to the final list
foreach v -> succs (u) {// for all neighbors
  delete u-v; // delete muchia u-v
  if (v has no edges)
   S = S + v; // add v to the set S
} // close foreach
} // close while
if (G has edges)
  print (error); // cyclic graph
else
  print (L); // topological order
}
```

Optimal complexity: O (| E | + | V |)

Graphs are very important for representing and solving a multitude of problems. The most common ways to represent a graph are:

- adjacency lists
- adjacency matrix

The two usual ways to go through an uninformed graph are:

- BFS - width traversal
- DFS - deep traversal

Topological sorting is a way of arranging nodes according to the edges between them. Depending on the starting node of DFS, different sorts can be obtained, but keeping the general properties of the topological sort.

4. Conclusions

Operational IT systems processes data generated and used in business operations. Depending on the role they have, there are several categories: transaction processing systems - record and process data resulting from transactions, update databases and produce a variety of documents and reports; process control systems - provide operational decisions that control physical

processes; automated service systems - those that support communications (Khuller, 2021; Harish, 2020). Economic automated systems have always been necessary for the processing of data generated and used in business operations. Operational systems produce a variety of information, but they (information) do not highlight which information products are best for managers. For this reason, further processing by computer systems is required (Khadda, 2020; Jansson, 2019). The complexity of data needs advanced algorithms to get economic indicators that managers can use in the process of making decisions. Graphs offer an optimal way to get the stored data using methods that implement the business logic that is used in economical processes that are vital for companies, such as supplies, orders, sales, processing, customer relations and other actions that are specific.

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THE IMPACT OF THE CORONAVIRUS PANDEMIC ON REMITTANCES

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Abstract: *COVID-19 generated a decrease in remittances worldwide from March to April 2020, a decrease that was initially forecast at about 20% throughout 2020. Final figures showed that they decreased by only 1,2% worldwide. However, the values differ from country to country (World Bank, 2020). The restrictive measures imposed by the quarantine, the decrease of incomes, the loss of jobs, but also the economic uncertainty discouraged the citizens to send money home. Given that remittances account for a significant percentage of the annual GDP of many countries, a reduction in them generates multiple socio-economic implications (Giuliano and Ruiz-Arranz, 2009). This paper aims to make a brief assessment of the evolution of migrant remittances in 2020, a year marked by numerous restrictions and socio-economic events related to the Coronavirus pandemic (worldbank.org).*

Keywords: *Labor force migration, remittances, COVID-19*

Classification JEL: *J1, J61, C33*

1. Introduction

With the outbreak of the COVID-19 pandemic, in order to prevent the spread of the virus, most employers, at the behest of the authorities in several host countries, ceased economic activities and, consequently, for most migrants, the income from work was either they have declined or become depleted, being eligible for "emergency" crisis support in the form of compensation directly to employees or employers to discourage mass redundancies and an exaggerated

rise in the unemployment rate (Castillo-Ponce, Torres-Preciado, & Manzanares-Rivera, 2020). At the same time, a large number of migrant workers, especially irregular ones, were not included in the pandemic protection policies of the workers by the host countries and, remaining without any source of income, they found themselves in the situation of returning as soon as possible more urgent in the country of origin (Orozco and Yansura, 2019).

For the vast majority of migrants, the decline in income has led, as a chain reaction, to challenges related to the difficulty or impossibility of paying apartment rents, communal services and mortgage rates. Although host country authorities have implemented measures banning the evacuation of landlords in times of medical crisis, facilities for rescheduling mortgage repayments and the possibility of postponing the payment of housing rental services, following interviews with migrants and diaspora exponents, while incomes have these measures only help for the time being, because, once the state of emergency / quarantine is over, these financial obligations must be met anyway, even to a greater extent because the accumulated debts will supplement the rates that were already quite difficult to reimburse for many migrant families (Giuliano, & Ruiz-Arranz, 2009). Also, irregular migrant workers, in the absence of an employment contract and / or registered lease, were often unable to benefit from the above provisions and cases were reported when they were evicted from rented housing. The decrease in the volume of remittances, as a direct consequence of the substantial decrease in the incomes noted above, is consistent (The World Bank, 2020a).

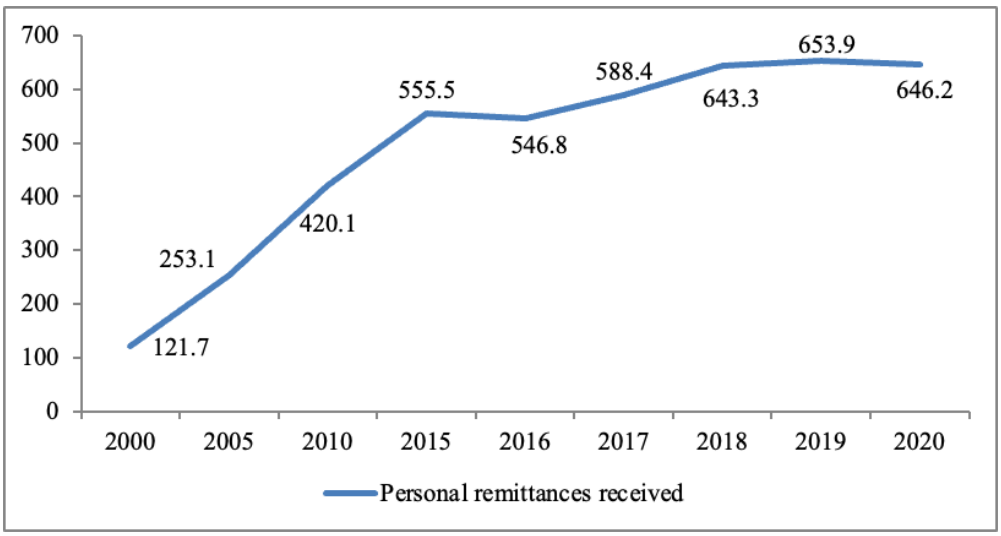
2. The evolution of remittances in 2020 worldwide

According to a report published by the World Bank, remittances to low and middle-income countries fell by only 1,2% in 2020 to 646,2 billion dollars. In April, World Bank specialists forecast a 19% decline. This decrease, much smaller than originally thought in remittances in 2020, is partly explained by the shift from informal remittances physically transported on the occasion of travel to formal remittances sent digitally, says the World Bank. Some migrants have also been able to access cash transfer systems in the countries where they work (INS, 2017).

Regarding our country, remittances sent to Romania by emigrants settled abroad were 7,44 billion dollars, representing 3% of GDP, down from 8,14 billion dollars in 2019, according to World Bank data. Despite these developments, the World Bank is counting on a 7,5% drop in remittances by 2021, to about $ 594 billion, compared to the previous estimate which predicted a return of 5.6%. By region, the World Bank (2020a) expects Europe and East Asia to be the hardest hit in 2020.

Next, we aim to review the evolution of these remittances, by regions of the world as well as by countries (Worldbank.org). Figure 1 shows the evolution of remittances worldwide, starting with the year 2000. If in the year 2000 remittances worldwide were worth 121,7 billion dollars, these amounts increased year by year, reaching the level of 420,1 billion in 2010. Between 2000 and 2010, there was the largest increase in these amounts (almost 300 billion). After 2016, the total value of remittances worldwide increased steadily until 2019, reaching 653,9 billion dollars. Between 2019 and 2020 there was a decrease in the total value worldwide of about 7,7 billion dollars, which was a decrease of 1,2% over the previous year (United Nations, 2020).

Figure 1. Personal remittances received - word (billions US $) - World Bank staff estimates based on IMF balance of payments data

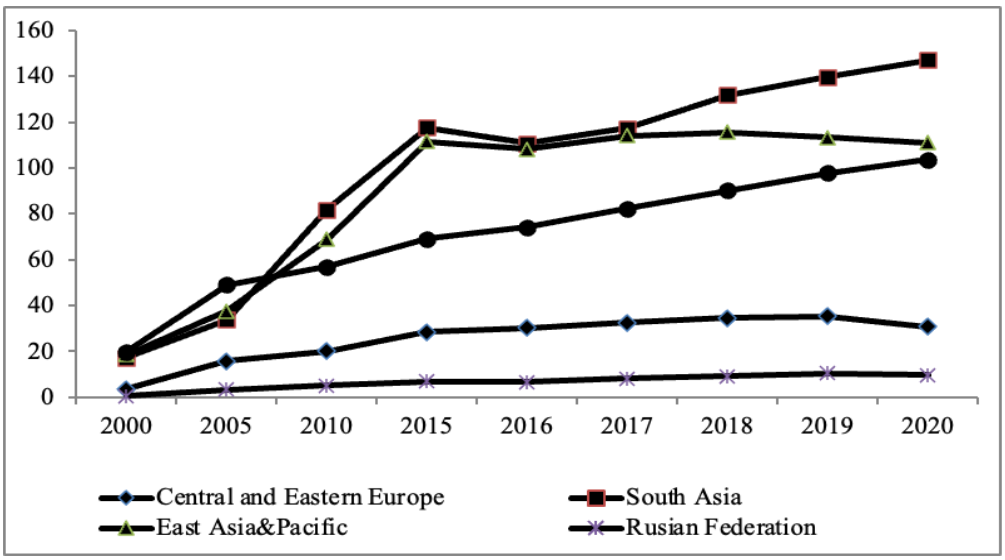


Source: The World Bank (2020b), https://data.worldbank.org/indicator/BX.TRF.PWKR.CD.DT

Evolution of remittances in 2020 by regions

The evolution of these remittances on the main areas of the world shows a differentiated evolution, if in some areas of the world (IFAD, 2019), these remittances registered a much more pronounced decrease compared to the global average, other areas of the planet even increased compared to 2019 (Figure 2). The largest decrease in remittances was registered in Central and Eastern Europe area (-12,5%), followed by the Russian Federation (-5,8%) and the East Asia and Pacific area (-1,9), the latter registering decreases starting with 2018. Remittances increased in Latin America and the Caribbean (+ 6,1%) followed by South Asia (+ 5,2%).

Figure 2. Personal remittances received by region (billions US $) – World Bank staff estimates based on IMF balance of payments data



Source: The World Bank (2020b).
https://data.worldbank.org/indicator/BX.TRF.PWKR.CD.DT

Analyzing the evolution of remittances in Central and Eastern Europe (which includes Romania), the area that recorded the largest decrease in remittances worldwide (-12,5%), we find that here too there were differentiated decreases at the level of each country (Table 1).

Table 1. The evolution of migrant remittances in the countries of Central and Eastern Europe

	2019 (US $ billion)	**2020 (US $ billion)**	**Difference 2020 compared to 2019 -%**
Central and Eastern Europe:	35,28	30,96	-12,2
Romania	8,14	7,44	-8,6
Poland	6,50	5,9	-8,8
Czech Republic	3,86	4,18	8,3
Croatia	4,0	4,0	-1,5
Hungary	4,71	3,65	-22,5
Slovak Republic	2,09	1,9	-10,0
Latvia	1,14	1,08	-5,3

	2019 (US $ billion)	2020 (US $ billion)	Difference 2020 compared to 2019 -%
Bulgaria	2,34	1,0	-59,4
Lithuania	1,3	0,79	-39,2
Estonia	0,54	0,5	-5,6
Slovenia	0,61	0,56	-8,2

Source: The World Bank (2020b), https://data.worldbank.org/indicator/BX.TRF.PWKR.CD.DT and author calculations

There are countries in Central and Eastern Europe that have seen dramatic declines in the volume of remittances in 2020, even the largest declines in the world compared to 2019 (Castillo-Ponce, Torres-Preciado, & Manzanares-Rivera, 2020). Among them we mention: Bulgaria (has recorded the largest decrease in these remittances: -59,4%), followed by Lithuania (-39,2%) and Hungary (-22,5%). The other countries (with the exception of the Czech Republic, which saw an increase in these remittances + 8,3%), fell below the region average of -12,2%: the Republic of Slovenia (-10,0%), Poland (-8,8%), Romania (-8,3%), Slovenia (-8,2%), Estonia (-5,6%), Latvia (-5,3%) and Croatia which had the lowest decrease in the region (-1,5).

3. Conclusions

The COVID-19 pandemic that hit the world had many economic and social repercussions in addition to the already known medical ones (Castillo-Ponce, Torres-Preciado, & Manzanares-Rivera, 2020). One of these is the impact on labor markets worldwide and consequently the impact on income and one of the most affected is the migrant labor force. This affected the volume of remittances that these migrants sent to their countries of origin (Orozco & Yansura, 2019).

However, as noted in the analysis above, some countries and regions saw increases in migrant remittances. Many countries also saw dramatic declines in remittances by more than half.

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HETEROGENEOUS SOCIO-ECONOMIC EFFECTS OF COVID-19. SOCIO-ECONOMIC IMPACT OF THE PANDEMIC CRISIS IN ROMANIA

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Abstract: *The crisis caused by coronavirus will certainly generate a multitude of changes, forcing us, among other things, to pay more attention to what means unconventional and the new socio-economic situations produced by it. Assumed of being a global issue, the current crisis is also generating a range of expectations in terms of resolving it. Among them and the one according to which due to its global character (global crisis) the answer must be also a global one. However, the social realities invite specific interventions according to local socio-economic context, being practically related to local particularities of the crisis. All of these explain why the consequences are different from one country to another. Regarding the crisis caused by coronavirus, even if the immediate effect of pandemic has been reflected rather in changes of the people's lifestyles (social distancing, isolation, etc.), the hardest impact has been felt because of the evolution of economics. The coronavirus pandemic has shaken up the world's largest economies. The impact of the coronavirus pandemic on world GDP growth is huge and probably the recession is the biggest since the end of World War II. Economies have contracted and have generated a wide range of problems: declining incomes, poverty, social inequalities, social polarization, social exclusion. All of these are considered as having a significant impact on the quality of life and wellbeing of an individual. This article seeks to make a brief assessment of the socio-economic impact of the coronavirus pandemic in Romania. Some important indicators that influence the standard of living of Romanians have already changed.*

Keywords: *AIC, COVAX, Covid-19, employment rate, GDP, GDP per capita, gender gap, life expectancy at birth, price dispersion, relative volume of consumption, social distancing, social exclusion, social inequalities, well-being*

JEL Classification: *A14, E 21, E24, E31, Z13*

1. General context

From a chronological perspective, the landmark that establishes the onset of the virus could be conventionally set in December 2019, the date of the coronavirus disease outbreak in the Wuhan region (China), which spread rapidly to the other areas of China and the world.

Official recognition by the WHO of the global Covid-19 pandemic (on March 11, 2020) has triggered in most democracies of the world launching of two types of public policy responses: supporting health systems (having the goal of stopping the spread of Covid-19) and adopting of measures to counteract the socio-economic impact of it.

On the one hand, within a paradigm that describes the belief that the solution to a global pandemic must also be a global one, the attention of the world's states has been focused on coordinating the global response to Covid-19. In this context, everybody was committing to collaborate aimed at:

- Joint coordination of efforts on public health measures (ensuring that every country will have access to vaccines against Covid-19, including the poorest);
- Cooperation in the field of science, research and technology;
- Joint coordination of efforts in global trade and in the investment;
- Cooperation on measures to restore confidence, relaunch economic growth and protect jobs.

That's how it's explained setting up the COVAX, result of a global initiative launched in April 2020 by the WHO, European Commission and France, aimed at equitable access to vaccines against COVID-19 (the initiative is led by GAVI - World Vaccine Alliance and Innovation Coalition):

- Considered one of the three pillars of "accelerator of access to COVID-19 instruments", COVAX coordinates international resources made available by a multitude of states and donors;
- Part of a global response (access of all states to vaccines against Covid-19), EU-27 is one of the largest donors of COVAX;
- EU-27 make it easier for equitable and universal access to an efficient vaccine against COVID-19 for millions of people in Africa, Asia, the Caribbean, the Pacific, but also in Europe's eastern and southern neighborhood.

In fact, on 8 April 2020, EU-27 has launched the "Team Europe" initiative mobilizing a budget of around € 40.5 billion, that combined resources from the EU Member's States and financial institutions, in particular the EIB and EBRD:

– The objective of the initiative is limited to support partner states in addressing the urgent response to humanitarian needs, strengthening health systems, mitigating socio-economic consequences;
– As part of this type of response of "Europe Team" could be considered the support of EU provides by stimulating investment in Africa and the vicinity of the European space (investments of about € 10 billion are expected) and that given to the health systems of partners EU from the Association of Southeast Asian Nations (ASEAN).

On the other hand, EU-27 wide management of crisis caused by Covid-19 imposed a lot of economic and social measures, strictly in the European space. The main types of responses, by areas of action were:

a. Ensuring safe and effective vaccines in the EU:

- Ensuring the supply of doses and vaccines and supporting vaccination in all EU Member States;
- Anticipating threats of new virus variants;
- Accelerate the manufacturing process of Covid-19 vaccine;
- Supporting (funding) research in the field.

b. Economic measures – 1.800 billion EUR recovery package (combines the EU budget for 2021-2027 with the NextGenerationEU).

2. The socio-economic impact of the Coronavirus pandemic in Romania

The whole world has entered into a crisis whose consequences are still difficult to predict. It remains of seeing how will be the Postpandemic future of life or of interpersonal relationships. Or if pandemic has redefined concepts like happiness or life satisfaction. Or individual well-being and quality of life. Almost all of them represent huge challenges for sociological research.

What are the effects of crisis in every country? How big are these effects? The EU-27 area labour market has been severely hit by the coronavirus. The coronavirus pandemic led to the sharpest contraction on record in employment. How big is this effect? Incomes falled and prices jumped. How has the pandemic financially affected every person or every household? Why the global economy is recovering faster than expected? Will the Recovery plan for the Europe make EU-27 more resilient?

Even we do not have data yet to build a relevant picture of socio-economic impact of the pandemic crisis it's worth emphasizing the changing of some values of important indicators that could influence the quality of life.

The present analysis is an attempt to address these issues focusing on analyse of those indicators that already signal possible changes due of the current coronavirus crisis.

a. Most of EU-27 countries have experienced declining GDPs in 2020

Gross Domestic Product is the most important unit of measurement for the overall size of an economy, while derived indicators such as GDP per capita are known as tools for comparing living standards or monitoring the process of economic convergence or divergence economic development in the European Union (EU).

From this perspective, it is known that the EU-27 economy recorded a consecutive annual growth for six years (2014-2019), achieving a significant recovery after the global financial and economic crisis in 2009.

The coronavirus crisis constituted a challenge for the European economy and the livelihoods. But what happened of the EU-27 economy in 2020? How has GDP been affected by coronavirus?

If we can agree that the pandemic produced a shock that affected the entire planet (and consequently the entire European space), the same cannot be said about its economic impact, which was heterogeneous within the EU-27.

We already know that according to data already presented by Eurostat, **the EU economy has contracted in 2020 by -6.1%**, the annual decline being higher for the euro area (-6.5%):

- After six consecutive annual increases, in 2020 the EU economy recorded its first fall in Investment;
- Most of EU-27 countries have experienced declining GDPs;
- Ireland's economy was the only one to grow in the EU last year; Ireland's economy grew by +3,4% (according to the European Commission the Ireland's economy was supported by „exports from multinationa companies specialising in medical equipment, pharmaceuticals and computer services";
- The countries that recorded the least negative impact on GDP in 2020 were Lithuania (-0,9%), Luxembourg (-1,3%), Poland (-2,7%), Denmark (-2,7%), Finland (-2,8%), Sweden (-2,8%) and Estonia (-2,9%);
- The countries that recorded the biggest negative impact on GDP in 2020 were Spain (-10,8%), Italy (-8,9%), Greece (-8,2%) , Croatia (-8%) and France (-7,9%);
- According to National Institute of Statistics, **Romania's GDP decreased by -3.9% in 2020 compared to 2019.**

Table 1. Real GDP rate of change, 2014-2020
(% change compared with the previous year)

	2014	2015	2016	2017	2018	2019	2020
EU-27	+1,6	+2,3	+2,0	+2,8	+2,1	+1,6	-6,1
IRELAND	+8,6	+25,2	+2,0	+9,1	+8,5	+5,6	+3,4
LITHUANIA	+3,5	+2,0	+2,5	+4,3	+3,9	+4,3	-0,9
LUXEMBOURG	+4,3	+4,3	+4,6	+1,8	+3,1	+2,3	_1,3
POLAND	+3,4	+4,2	+3,1	+4,8	+5,4	+4,7	-2,7
DANEMARK	+1,6	+2,3	+3,2	+2,8	+2,2	+2,8	-2,7
FINLAND	-0,4	+0,5	+2,8	+3,2	+1,3	+1,3	-2,8
SWEDEN	+2,7	+4,5	+2,1	+2,6	+2,0	+2,0	-2,8
ESTONIA	+3,0	+1,8	+3,2	+5,5	+4,4	+5,0	-2,9
ROMANIA	+3,6	3,0	+4,7	+7,3	+4,5	+4,1	-3,9
SPAIN	+1,4	+3,8	+3,0	+3,0	+2,4	+2,0	-10,8
ITALY	0,0	+0,8	+1,3	+1,7	+0,9	+0,3	-8,9
GREECE	+0,7	-0,4	-0,5	+1,3	+1,6	+1,9	-8,2
CROATIA	-0,3	+2,4	+3,5	+3,4	+2,8	+2,9	-8,0
FRANCE	+1,0	+1,1	+1,1	+2,3	+1,9	+1,8	-7,9

Source: ec.europa.eu/eurostat/statistic-explained/images/9/91/Real_GDP_rate_of_change%2C_2005-2020_NA2021.png

Many economic analists appreciate that all EU-27 Member States are forecast to return to economic growth in 2021. If on compared with the same quarter of the previous year, GDP decreased by -1,3% in the first quarter of 2021 (after -4,3% in the previous quarter):

- Countries that recorded the biggest GDP increase in the first quarter of the 2021 compared with the same quarter of the previous year were Ireland (+9,9%), Estonia (+5,0%) and Luxembourg (+4,9%);
- Countries that recorded the least GDP increase in the first quarter of the 2021compared with the same quarter of the previous year in the first quarter of the 2021 were Portugal (-5,3%), Austria (-4,5%) and Spain (-4,2%);

b. The average GDP per capita decreased in 2020 in UE-27 by -6% compared the previous year [1]

Excluding Ireland (+ 4.7%), GDP per capita decreased in all EU-27 countries. There is still a sharp dispersion of GDP per capita within the EU, Luxembourg was obtaining in 2020 the highest per capita income (81,290 EUR) even if it records a decrease of -2.8% compared the previous year:

- On the one hand, countries that recorded the highest decrease in GDP per capita compared the previous year were Spain (-11.3%), Malta (-10.3%), Italy (-8.4%), Greece (-8, 1%) and France (-8.1%);
- On the other hand, countries that recorded the smallest decreases in GDP per capita compared the previous year were Lithuania (-0.9%), Denmark (-2.3%), Poland (-2.6%), Luxembourg (-2.8 %), Finland (-3%) and Latvia (-3%);
- According to the Eurostat data, **Romania registered in 2020 a decrease of -3,6% of GDP per capita compared to 2019.**

c. There is a slight increase in prices in 2020, compared to the European average

The Actual Individual Consumption (AIC) is the main indicator which discribe the material welfare of households. According to Eurostat data levels of AIC per capita are more homogeneous than GDP but „still there are substantial differences across the EU Member States":

- On 9 of the EU-27 states AIC decreased, in one has remained it at the same value, while in the other 17 it has had a slight increase;
- Luxembourg remained the country that recorded highest level of AIC per capita at 31% above the EU average;
- Luxembourg is followed by the Germany and Denmark that recorded an AIC per capita at 23% and 21% above the EU average;
- **Compared to previous year, Romania recorded an increase in AIC of 1% (from 78% to 79% of the European average);**
- As regards the price level in EU-27, only for AIC, price dispersion is less pronounced in the euro area than in the EU as a whole;
- There is a slight increase in prices in 2020, compared to the European average, especially in the euro area (Sweden + 7.3%, Luxembourg + 5.5%, Finland + 2.1%);

1 The indicator is calculated as the ratio of real GDP to the average population of a specific year. GDP measures the value of total final output of goods and services produced by an economy within a certain period of time. It includes goods and services that have markets (or which could have markets) and products which are produced by general government and non-profit institutions. It is a measure of economic activity and is also used as a proxy for the development in a country's material living standards. However, it is a limited measure of economic welfare. For example, neither does GDP include most unpaid household work nor does GDP take account of negative effects of economic activity, like environmental degradation.

- Luxembourg registered the highest price levels among the Member States (+53%);
- On the one hand, Denmark, Sweden, Ireland and Finland registered price levels more than 20% above the EU average (Austria, The Netherlands, Belgium, France, Germany and Italy registered price levels above the EU average);
- On the other hand, Spain and Cyprus registered a price level at less than 10% below the EU average (Malta, Portugal, Slovenia, Greece, Estonia, Slovakia registered a price level at less than 20% below the EU average);
- **Romania registered the least price level across the EU – 49% of the EU average.**

d. The majority EU Member States registered lower employment rate in 2020

The health crisis caused by the Covid-19 pandemic has had an impact on employment in the EU-27:

- According to Eurostat data the employed rate in the EU-27 population kept on growing from one quarter to the next since 2013 to 2020;
- The majority EU Member States recorded a lower employment rate in the fourth Quarter (Q4) of 2020 compared to the fourth Quarter (Q4) of 2019 (23 out of 27);
- There were states that registered an employment rate which decreased by more than -3% between the first and the second quarter of 2020 - Spain (-4,5%), Ireland (-4%), Estonia (-3,3%);
- Practically, from Q1 to Q2 of 2020 the employement rate increased only in Luxembourg (+0,2%);
- According to Eurostat data at the end of 2019, there were more 227.4 million people employed in the European Union and United Kingdom, but in the first half of 2020 this number dropping by six million;
  - In Romania the employment rate decreased 2,5%, from 71,9% in Q1 to 69,4% in Q2 of 2020;
- From the first quarter of 2020 to the second quarter of 2020 the share of people in employment **went down in EU-27 from 73,2% to 71,7%**;
  - According to Eurostat data from the third to the fourth quarter of 2020 the employment rate increased in 18 out of 27 EU States;
  - The largest increases registered by the Luxembourg (+2,1%) and Estonia (+1,2%), while the employment rate remained stable in Germany, Malta, Czechia and Slovenia;

- The employment rate slightly decreased in Hungary, Cyprus, Austria, Belgium and Slovakia with drops between - 0,3% an -0,1%;
- Only Poland (+0,9%), Luxembourg (+0,6%), Malta (+0,5%) and Greece (+0,1%) recovered or exceeded their fourth-quarter 2019 level in the fourth quarter of 2020;
- **In Romania the employment rate increased by 1%, from 70,4% in Q3 to 71,4% in Q4 of 2020;**

Table 2. Employment and activity by sex and age – quartely data (%)

	2019 Q2	2019 Q3	2019 Q4	2020 Q1	2020 Q2	2020 Q3	2020 Q4	2021 Q1
EU-27	73,2	73,1	73,3	73,2	71,7	72,3	72,7	71,9
SPAIN	68,0	67,9	68,3	68,1	63,6	65,2	66,0	66,6
IRELAND	74,8	74,9	75,5	75,5	71,5	72,9	73,6	71,4
ESTONIA	79,5	80,0	81,1	80,8	77,5	77,8	79,1	79,4
LUXEMBOURG	73,1	72,6	73,1	71,4	71,8	71,7	73,6	72,9
HUNGARY	75,3	75,1	75,3	75,2	74,4	75,1	75,3	77,7
CYPRUS	76,2	75,6	75,8	75,5	75,0	74,7	74,6	73,7
AUSTRIA	76,7	76,9	76,9	76,3	74,2	75,8	75,7	74,5
BELGIUM	71,0	70,7	70,5	70,4	69,6	70,2	69,9	69,0
SLOVAKIA	73,5	73,3	73,0	73,1	72,5	72,4	72,1	72,9
ROMANIA	70,7	70,9	71,5	71,9	69,4	70,4	71,4	67,2
POLAND	73,0	73,1	73,3	73,5	72,9	73,6	74,2	74,4
MALTA	76,9	76,3	77,3	78,6	76,6	76,8	77,6	77,6
GREECE	61,3	61,3	61,4	61,4	60,3	61,4	61,5	58,3

Source: ec.europa.eu/eurostat/databrowser/view/lfsi_emp_q/default/table?lang=en

- While Sweden 980,6%) and Germany (80,0%) recorded the highest employment rate among people aged 20 to 64 in Q4 of 2020, Greece (61,4%), Italy (62,9%), Spain (66,0%) Croatia (66,9% and Belgium (69,9%) recorded the lowest employment rates;

- In the same period (Q4 2020) **the employment gender gap in the EU-27 was 11,2%** (78,2% of men employed compared to 67,0% of women);
    - The largest differences were recorded by Italy (19,5%), **Romania (19,4%)**, Greece (18,5%) and Malta (18,0%);
- Except in Romania, the employment rate of young people (aged 15 to 24) went down in all countries of the EU-27 between Q4 of 2019 and Q4 of 2020;
    - The employment rate in EU-27 among young people decreased -2,4%, from 33,5% in Q4 of 2019 to 31,1% in Q4 of 2020;
    - The biggest rate of employment among the young people was in Q4 of 2020 in Netherlands (62,5%), Denmark (53,0%) and Austria (50,3%);
    - The lowest rate of employment amomg the young people was in Q4 of 2020 in Bulgaria, Spain, Italy and Greece (less than 20%):
    - The largest decreases (more than 5%) of the employment rate among young people between Q4 2019 and Q4 2020 has recorded in Poland, Portugal and Malta (all -5,4%) and Ireland (-6,3%);
- The employment rate of persons aged between 25 and 54 decreased – 0,6% (from 80,7% in Q4 2019 to 80,1% in Q4 2020 (141,2 milion people in Q4 2020);
- The employment rate of persons aged 55-64 (36,2 milion people in Q4 2020) incresead +0,5% (from 59,7% in Q4 2019 to 60,2% in Q4 2020);
- The employment rate increased by 1% in the next two quarters (72,7%, Q4 of 2020), but **decreased to 71,9% in the first quarter of 2021** (Q1 of 2021);
    - In **Romania** the employment rate **decreased 4,2%** from 71,4% in Q4 of 2020 to 67,2% in Q1 of 2021.

e. Life expectancy at birth[2] decreased in 2020 across the UE-27

If the official statistics reveal that life expectancy at birth has risen by more two years per decade since 1960s, after the outbreak of the Covid-19 pandemic, life expectancy at birth fell in 2020 in the majority of the EU-27 states. According to Eurostat data:

- The average of life expectancy at birth was estimated in 2019 in EU-27 at 81,3 years, that means 0,3 years higher than 2018 (84 years for women and 78,5 years for men);

2 Life expectancy at a certain age is the mean additional number of years that a person of that age can expect to live, if subjected throughout the rest of his or her life to the current mortality conditions (age-specific probabilities of dying, i.e. the death rates observed for the current period)

- Between 2002 and 2019 the average of life expectancy at birth in the EU-27 increased by 3,6 years (from 77,7 to 81,3 years);
- Compared to 2019, in 2020 in most Member States the average of life expectancy at birth registered a significant decreases, with the largest decreases recorded in Spain (-1,6 years), Bulgaria (-1,5 years), Lithuania (-1,4 years), Poland (-1,4 years) and **Romania (-1,4 years);**

Table 3. Life expectancy at birth by age and sex, 2013-2020 (years)

	2013	2014	2015	2016	2017	2018	2019	2020
EU-27	80,5	80,8	80,5	80,9	80,9	81,0	81,3	
SPAIN	83,2	83,3	83,0	83,5	83,4	83,5	84,0	82,4
BULGARIA	74,9	74,5	74,7	74,9	74,8	75,0	75,1	73,6
LITHUANIA	74,1	74,7	74,6	74,9	75,8	76,0	76,5	75,1
POLAND	77,1	77,8	77,5	78,0	77,8	77,7	78,0	76,6
ROMANIA	75,1	75,0	74,9	75,2	75,2	75,3	75,6	74,2
BELGIUM	80,7	81,4	81,1	81,5	81,6	81,7	82,1	80,9
ITALY	82,9	83,2	82,7	83,4	83,1	83,4	83,6	82,4
CZECHIA	78,3	78,9	78,7	79,1	79,1	79,1	79,3	78,3
SLOVENIA	80,5	81,2	80,9	81,2	81,2	81,5	81,6	80,6
FRANCE	82,4	82,9	82,4	82,7	82,7	82,8	83,0	82,3
LUXEMBOURG	81,9	82,3	82,4	82,7	82,1	82,3	82,7	81,8
NETHERLANDS	81,4	81,8	81,6	81,7	81,8	81,9	82,2	81,5
AUSTRIA	81,3	81,6	81,3	81,8	81,7	81,8	82,0	81,3

Source: ec.europa.eu/eurostat/databrowser/view/demo_mlexpec/default/table?lang=en

- While in 2019 in 25 EU Member States the average of life expectancy at birth increased compared to the previous year (exceptions being Greece and Cyprus), in 2020 life expectancy at birth has decreased in 9 Member States by more than 1 year (Spain, Bugaria, Lithuania, Poland, Romania, Belgium, Italy, Czechia, Slovenia) and decreased by less than 1 year or stagnated in the rest (Finland and Denmark decreased 0,1 years);
    - We don't have data yet for the regions in 2020. But across the EU regions the highest average of life expectancy at birth in 2019

was in central and northern Italy, in the Central Spanish region of Madrid and in the northern Spanish region of Navarra;

- In 2020 the average of life expectancy at age 65 also recorded a drop across the majority of the Member States of EU-27 (-1.5 years in Poland and Spain, -1.3 years in Belgium, -1.2 years in Italy, **Romania -1.1 years** and Slovenia -1,1 years);
- There are still differences between countries concerning men and women's life expectancies. According to Eurostat data in 2020, the average of life expectancy for women is still higher than the average of life expectancy for men (a gender gap of 5.5 years in 2019);
    - The largest difference between the sexes was in 2020 in Lithuania (9.9 years);
    - The smallest difference between the sexes was in 2020 in the Netherlands (3.3 years).
    - Regarding decreases in the average life expectancy at birth, generally, men were in 2020 more affected than females (the largest declines have recorded in Bulgaria -1.7 years, Lithuania -1,5 years, Poland -1.5 years, Spain -1,4 years, and Romania -1.4 years).

Conclusions

- If we can agree that the pandemic produced a shock that affected every Member States of the EU, its economic impact was heterogeneous within the EU-27;
- As expected, the requirement of the containment measures needed to fight the health crisis has manifested differently across countries and along the time;
    - At the same time, the impact of lockdown measures has been heterogeneous across countries;
- As expected, the COVID-19 crisis has disrupted the cross-country convergence process regarding living standards;
- After six consecutive annual increases, in 2020 the EU economy recorded its first fall as regards Investment;
- Most of EU-27 Member States have experienced declining GDPs;
- The average of GDP per capita in 2020 across the EU-27 decreased by -6% compared to previous year;
- According to Eurostat data the levels of the Actual Individual Consumption (AIC) per capita are more homogeneous than GDP but „still there are substantial differences across the EU Member States";

- Regarding the price level in EU-27 (only for AIC) the price dispersion is less pronounced in the euro area than in the EU as a whole;
- The health crisis caused by the Covid-19 pandemic had a relevant impact on employment rate in the EU-27;
- The majority EU Member States had lower employment rate in the fourth Quarter (Q4) of 2020 compared to the fourth Quarter (Q4) of 2019 (23 out of 27);
    - From the first quarter of 2020 to the second quarter of 2020 the share of people in employment **went down in EU-27 from 73,2% to 71,7%**;
- After the outbreak of the Covid-19 pandemic, life expectancy at birth fell in 2020 across the majority of the EU-27 Member States;
    - While in 2019 in 25 EU Member States the average of the life expectancy at birth increased compared to the previous year (exceptions being Greece and Cyprus), in 2020 the average of life expectancy at birth decreased in 9 Member States by more than 1 year (Spain, Bugaria, Lithuania, Poland, Romania, Belgium, Italy, Czechia, Slovenia) and by less than 1 year or stagnated in the rest (Finland and Denmark decreased 0,1 years);
- According to National Institute of Statistics, **Romania's GDP decreased by -3.9% in 2020 compared to 2019;**
- According to Eurostat data, compared to previous year, Romania had in 2020 a **decrease in GDP per capita of -3.6%**;
- Compared to previous year, **Romania recorded an increase in AIC of 1%** (from 78% to 79% of the European average);
- **Romania registered in 2020 the least price level across the EU (49% of the EU average);**
- In Romania **the employment rate increased 1%, from 70,4% in Q3 to 71,4% in Q4 of 2020, but decreased 4,2% from 71,4% in Q4 of 2020 to 67,2% in Q1 of 2021;**
- Compared to previous year, in 2020 **the average of life expectancy at birth decreased -1,4 years** in Romania**.**

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FRAUD MECHANISMS - ACCOUNTING AND FISCAL EVALUATION - SEEN AS POSSIBILITIES FOR ESTIMATING THE UNDERGROUND ECONOMY

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Abstract: *The interrelationship between activities specific to the shadow economy and those specific to corruption is obvious and long-noted between academia, numerous authors, and international institutions. A deeper understanding of this economy can help to provide a basis for the behavioral analysis of those who are prone to fraud, so that opportunities for manifestation are limited by the creation of effective control mechanisms. The research issue, therefore, proves to be useful and front-runner to new directions for further development, taking into account its importance, timeliness, significance, and necessity, for financial management, both public and private, for accounting and tax professionals, and for any person interested in the harmonious good-boarder development of the society we live in. Statistical estimates are drawing strong alarm signals in global economies, where we are dealing with huge proportions of the "underground" economy, with estimates of up to half of the economic activity carried out. It is noted that the global trend toward macroeconomic modeling in the area of measuring the "shadow" economy is present. One example, which comes to support this idea, is our own country. According to the information provided by the National Statistics Institute, 20% share of the "underground" economy in GDP, while some specialists, including the Romanian Intelligence Service, estimate a 45% share of the "underground" economy. The differences are colossal and come to broaden the line of arguments that are not suitable for measuring the economy of this kind and its relevance.*

Keywords: *"underground" economy, economics, economic development, globalization*
JEL Classification: *A14, B22, H26, F62*

Introduction

The size of the "underground" economy currently does not allow us to move into ignorance. Quantitative estimates of the size of this economic component make us more responsible for the solutions that need to be developed to prevent and combat it. In our view, the difficulty in defining the phenomenon of the shadow economy may be mainly due to the multitude of activities that are included in its scope, as well as to the specific features of this type of economy in time and space.

From the literature study, I have noticed that the shadow economy has evolved on various steps, both in terms of appearance and extent and in terms of analysis and research. So today, we are talking about highly refined activities of the shadow economy that have taken on the world economy, and the writing in this area is beginning to be no longer content with police analysis, which they have become accustomed to in the long run, which is why we are seeing a fine analysis, bold over its status and the judging of the right to conceptual design. A striking example of this is the proposal already in the literature to stop obstinately trying to annihilate the shadow economy from the economic component of a country, but to try to establish a natural rate of this component, as is a natural rate of unemployment.

So, the shadow economy exists everywhere and will exist, which is certified by its very nature, which is closely correlated with human nature. Therefore, a real challenge in terms of scientific analysis is to highlight the impact on the level of economic development and not to obstinate the percentage of dissemination.

The current framework of the underground economy

Human nature is built in such a way that it tries to create as many ways as possible to satisfy its needs. The collective need requires input from the individual agent, who feels assaulted when he is deprived of some of the means he has acquired himself with his own efforts. The more the individual feels that his or her contribution is not effectively used, the more he or she will regard this effort as unjustified and will try to evade.

We therefore consider the scale of the "underground" economy to be fragile in the relationship between the state and the public, so that there is a strong need to improve it. From the above-mentioned considerations we maintain that the shadow economy can be studied mainly in relation to private agencies because they are most interested in protecting their own sources used in the economic area, rather than state agents, which operate not with their own sources.

We define the concept of a black economy as all those economic activities carried out at the limit or in breach of criminal, social, or fiscal laws, which are not recorded or invented in national accounts or official statistics, and whose measurement can never be measured accurately. Synthetically expressed, therefore, would be those activities that are clustered, illegal or fraudulent activities.

Economic and non-economic factors of influence of the underground economy

In our opinion, the existence and expansion of the shadow economy is to a large extent due to the legislative and institutional support of the official economy. The main factors that can contribute to the emergence of this sector in the economy are:

a) excessive taxation;
b) very strict government regulations for certain types of economic activity;
c) prohibition of certain types of activity;
d) fear of loss of social benefits granted by the state;
e) too much flexibility in the use of labor.

The underlying factors of the shadow economy are an intensive research topic. They can mainly be classified as economic factors - through tax, legal, administrative and psycho-social pressure. Inequality of taxation and redistribution will always exist, regardless of the type of reforms implemented by the state authorities. Reality shows that the "underground" economy is the first and most important sign of government failure. As time has shown, on several occasions, the state is the most important organization in a society, and should be concerned about defending the social interest.

After the 1989 revolution, Law 31/1990 was the first measure to achieve the transition from the planned to the market economy, but did not have the expected effect due to the lack of implementation framework and the impossibility of adapting the company to the new realities. Unlike Western countries, Romanian legislation allows the setting up of single-member private limited liability companies. Although it is a company with legal personality, the managers often confuse the assets of the company with the assets of the individual, and there are many cases of ill-faith use of its credit.

At the administrative level, the inadequacy of internal and external controls is a decisive factor in the possibility of committing offenses in the area of the shadow economy. After the 1989 revolution, the need to control economic activity was underestimated. The period 1990-1991 followed when all forms of internal control and management were abolished. Law 58/1991,

on the setting up of shareholders' general meetings and the appointment of boards of directors, minimized the role of the supervisory bodies in ministries, which lost legal powers to intervene with controlling actions in companies. In many people's view, democracy and the separation of powers in the state were synonymous with the law of good liking, with defiance of the basic rules and standards of living together

In Romania, the internal controls of the companies are carried out by the censor, elected by the general assembly. They shall carry out a formal check in agreement with the management of those companies. Thus, when criminal acts are found, action is taken by the General Assembly and the persons responsible continue their work without being held accountable.

External controls are carried out by state institutions with powers of control in this area, but they are often insufficient and ineffective in finding offenses. This is due to the fact that the control topic does not specifically address the finding of criminal offenses, but to the specific aspects of individual institutions, administrative and non-criminal aspects.Where the constitutive facts of a criminal offense are established, criminal sanctions are usually applied and judicial bodies are not referred to take criminal measures where appropriate. In this respect, we believe that the persons in charge of control must be better trained, because they are of a different profession or economists and find it difficult to establish the criminal nature of an established act. However, police findings are few compared to the actual number. This is why we also believe that it is necessary to prepare them from an economic point of view, too, in order to be able to ascertain and properly deal with such crimes. It is also necessary that the logistical facilities of the institutions responsible for preventing and combating such offenses are much higher than those held by criminals.

It is added that some of the countries affiliated to Interpol do not allow extradition in the event of such crimes, even in the presence of an international Treaty, taking advantage of the existence of various restrictive conditions.

In conclusion, given the main determinants of the development of the shadow economy, they must be analyzed in order to limit the harmful effects of this phenomenon. In our opinion, starting from the inefficiency of the governing act and its influence on the legislative framework and the level of the fiscal pressure, there is a deterioration in the economic environment and a deterioration in social ethics.

Effects that are beneficial and complementary to the phenomenon of the underground economy

Following the study of the literature, we made a systematic assessment of the effects that underground activities have on economic and social life and classified them as follows:

- the effect on markets, where the shadow economy influences markets through the following channels of transmission: imbalance in supply and demand on official markets, through purchases of goods and services not reappearing in the supply, or through supplies of goods and services which do not correspond to demand; re-balancing the labor market through informal labor use; creating parallel markets for some goods and services, leading to parallel prices for the same good or service, leading to unjustified reallocation of resources.
- the effect on economic behavior by changing the nature of the public and private sector saving and investment function;
- the effect on the monetary balance that is influenced by the shadow economy over the following transmission channels: parallel prices, both for goods and services and for labor, for the national currency; the diversion of a significant monetary mass and thus the disruption in the cash/scriptural ratio; create waiting effects in relation to the main macroeconomic variables: interest rate, inflation rate and exchange rate; amplify speculative transactions; effect on the external balance of payments;
- effect on the general consolidated budget. The stability and efficiency of governance depend to a large extent on the quality of information that underpins the development of the programs of political, social and economic objectives.

One of the most serious effects of the shadow economy is that of increasing distances between different social groups. Economic differences are becoming significant in that some social groups participating in informal economic activities can reap huge benefits, while society is experiencing a worsening of the standard of living. The commission of crimes in the shadow economy is closely linked to other segments of social life and generates particularly serious overall consequences:

- ✓ increasing the process of social inequality through the rapid and unjustified enrichment of such persons, which consequently leads to a reduction in the standard of living of the vast majority of the population;
- ✓ the emergence of mafia-type networks, seen as the links of international financial fraud networks;
- ✓ the widespread practice of unfair competition vis-a-vis honest economic operators, who will be stifled and excluded from the market by those who earn illicit revenues;
- ✓ the illegitimate accumulation of capital by crooked people;
- ✓ the degradation of the socio-economic environment, which is collapsing since it is not based on real value;

- ✓ to slow down the process of economic and social reform, to the detriment of the large majority of the population
- ✓ the increase in the lack of confidence of some important sections of the population in the effectiveness of market economy, political authority, moral probity of state institutions, justice, with serious affectation of the principle of democracy.

In addition to these general consequences, crimes in the shadow economy also generate special consequences, such as:

- ✓ damage to shareholders presenting false financial statements;
- ✓ bankruptcy of a company by buying shares at a higher price or their sale at a price below the actual price;
- ✓ distribution of dividends from fictitious profits to the detriment of a company;
- ✓ reduction of the share capital in order to damage a company, without the associations being executed in order to make the payments due
- ✓ the issuance of shares and bonds for damage to a company;
- ✓ creating a state of danger for activities carried out in the framework of their functions in breach of the legal provisions on incompatibility;
- ✓ voting at the general meeting in exchange for material benefits;
- ✓ damage to the economic system and to persons who come into contact with a commercial company established in foreign countries and who carry out commercial papers without fulfilling legal conditions for the operation in Romania.

Methods for identifying and quantifying the underground economy

Most of the estimates of the underground economy in Romania are made on the basis of information provided by the National Institute of Statistics and the Ministry of Finance. The evaluations carried out assume that the underground economy encompasses legal activities, deliberately evaded reporting to public authorities in both the formal and informal sectors. According to the NSI (methodology developed with international assistance from EUROSTAT and PHARE) methodology, the formal sector comprises legal entities organized as companies, non-financial quasi-corporations or public institutions. In identifying and quantifying the shadow economy, according to the literature studied, the main use of direct and indirect estimation methods is made.

Direct estimation methods are seemingly empirical tests of quantifying the level and structure of the shadow economy. Based on simple but very complex models, these methods require the use and analysis of data obtained,

mainly from statistical surveys and their extrapolation based on specific methodologies. These methods are generally the only ones officially accepted and the results obtained are used to substantiate or justify the measures taken by political and administrative decision-making bodies.

The most commonly used direct methods of estimating the level of the shadow economy are:

- The method of statistical survey;
- The method of tax investigation.

In direct methods of estimating the shadow economy, the most important disadvantages are related to the determination of the sample to be investigated, the subjectivity of the data analyzed or the lack of representativeness of the values obtained, and the interpretation of these results. We also stress that, in general, the statistical survey method analyzes the level of the shadow economy in the light of the level of undeclared work as a component of the phenomenon being analyzed, and the objectivity of the method of tax investigation is largely due to the way in which the control program captures all areas with high potential for shifting activities from the real economy to the shadow economy. Between these methods, we believe that the method of tax investigation is more effective due to the very low bias of the data analyzed, and the development of an effective control program can eliminate the problem of its lack of representativeness. In contrast to direct estimation methods, which are based on micro-economic analysis, indirect estimation methods are generally based on macroeconomic indicators and target the inconsistencies (discrepancies) between them.

Conclusion

The "underground economy" is the first and most important sign of government failure, especially if we consider all the key factors in its development that need to be looked at from the perspective of limiting its harmful effects. Thus, starting from the inefficiency of the governing act and its influence on the legislative framework and the level of fiscal pressure, there is a deterioration in the economic environment and a deterioration of social ethics. Of course, we cannot ignore here the psychology of every person and the inadequacy of their tax and civic education. The growing difference between the living standards of different social categories, especially as some people have accumulated important wealth by dishonest means, has created honest people a state of social discomfort and has caused this type of crime to be committed. The assessment of the impact of this phenomenon has found it extremely complex and definitely cannot be based on an exact quantification, but at best only in probabilistic terms.

According to the National Accounts System developed by the National Statistics Institute, the underground economy refers to tax evasion on VAT and undeclared work. We believe that this method is wrong as an approach, but also as a calculation method. First of all, undeclared work is also a form of tax evasion by hiding the tax base (salary). Then, what NSI means by tax evasion is limited only to tax evasion related to VAT, ignoring other taxes and duties as the object of fraud, in particular corporate tax, excise duties and customs duties. The method used to assess undeclared work is based on comparing labor demand and supply to identify those who are engaged in a legal but undeclared activity with the law authorities. This method is considered irrelevant because it does not in any way reflect the amount of income earned by individuals in relation to their accumulated wealth and expenditure over a certain period of time.

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CASE STUDY ON ENTREPRENEURIAL TRAINING NEEDS AMONG STUDENTS

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Abstract: *This article presents the results of a sociological survey based on a questionnaire conducted to find out the needs, attitudes and opinions of students of the University of Medicine and Pharmacy of Craiova, Romania, and their willingness to start a business. Considering the specific profile of the target group, consisting of students of the University of Medicine and Pharmacy of Craiova, within the Faculty of Medical Assistance, the Faculty of Dentistry and the Faculty of Pharmacy, respectively students pursuing long-term master's studies and PhD, a special emphasis was placed on the formulation of interrogative items on the development of entrepreneurship in the Health and Pharmaceuticals sector, an area recognized by the ,,National Strategy for Competitiveness 2015-2020" as one with significant competitive potential. The research group consisted of 747 subjects.*

Keywords: *new companies' formation, entrepreneurship, student entrepreneurship, health entrepreneurship*
Jel Classification: *C44, C88, I23*

1. Context

In the elaboration of the study, the National Strategy for Competitiveness 2015-2020 was taken into account, which identifies 10 sectors with competitive potential, which correlate with the areas of smart specialization identified by the National Strategy for Research, Development and Innovation 2014-2020.

These fields, which were taken into account in the elaboration of the present research tools, are: tourism and ecotourism; textiles and leather; wood and furniture; creative industries; automotive and components industry; information and communication technology; food and beverage processing; health and pharmaceuticals; energy and environmental management; bioeconomy (agriculture, forestry, fisheries and aquaculture), biopharmaceuticals, biotechnologies.

The vision of the National Strategy for Competitiveness 2015-2020 starts from the following premises:

- Capitalizing on the best advantages available to Romania, the top specializations in production and research, as well as local qualification resources, entrepreneurial initiative and natural factors;
- Increasing the attractiveness of the conditions for the competitive development of business through transparent and stimulating regulations for innovation;
- Formulation of public policy directions around initiatives and achievements with major impact on creating added value in the business environment;
- Correlation of development initiatives at sectoral, territorial and societal level for efficient and integrated training of competitive advantages.

One of the priorities of the National Competitiveness Strategy 2015-2020 aims to improve the regulatory environment. In this regard, important steps have been taken by adopting measures to reduce taxation, through the Law of the Fiscal Code:

- Extending the application of the reinvested tax exemption in the production / acquisition of electronic computers and peripheral equipment, machines and household appliances, control, invoicing, as well as in computer programs;
- Reduction of the dividend tax rate from 16% to 5% starting with January 1, 2017, for dividends distributed between Romanian legal entities, as well as for persons resident in the European Union and states with which Romania has concluded double taxation agreements;
- Reduction of the tax rate for incomes obtained by individuals in the form of dividends, including income obtained as a result of holding shares defined by the relevant legislation in collective investment undertakings, to 5% of their amount, starting with January 1, 2017 ;
- Reduction of the standard VAT rate to 20% from 1 January 2016 and to 19% from 1 January 2017.

- The Strategy also aimed to support factors and support services. In this regard, the promotion of the enterprises' own research and development and innovation activities was considered, including by promoting support measures financed from national and European funds. It also aims to develop, especially in the fields of intelligent specialization, integrated structures that bring together companies and research organizations with a similar and / or complementary profile. The strategy also aimed at promoting the 10 economic sectors with competitive potential (mentioned above) and ensuring foundations in the field of education, adapted to today's society, through objectives such as: monitoring compulsory education based on a standard of skills generated by international experiences, implementation a flexible and innovative system in education, fostering intellectual openness to the values of contemporary civilization and creating bridges with the diaspora through sustainable cooperation mechanisms - opportunities for professional affirmation.

We also mention that this research was undertaken within the „Innotech student 2020" program. This is an entrepreneurship program that provides funding for entrepreneurial schemes of students who want to open a small business in Romania. The program is funded by the Human Capital Operational Program (POCU) 2014-2020, Priority Axis 6 - Education and skills, Thematic objective 10: Making investments in education, training and vocational training in order to acquire skills and learning throughout life.

2. Research methodology

2.1. The purpose or general objective of the research: to know the needs, attitudes and opinions of the students of the University of Medicine and Pharmacy from Craiova, as well as their availability to start a business.

2.2. Target group: students of the University of Medicine and Pharmacy of Craiova

2.3. The way the data was collected: online

2.4. The period in which the questionnaires were applied: 12.08.2020 - 29.08.2020

2.5. Number of completed questionnaires: 748

2.6. Number of validated questionnaires: 747 (a questionnaire was not taken into account due to the fact that the respondent did not give his consent to the processing of the data provided.) We also mention that the items that succeed the filter question Would you like to open your own business in the

field What specialization will you obtain after completing your studies ?, only the respondents who answered "Yes" to this question have in mind, so a total of 569 students

2. 7. Research limits:

- the accuracy of the information was affected due to the way the information was collected online (answers to the questionnaires);
- the questionnaires were not applied to a representative sample, they were answered by students who had access to information on the application of the questionnaire;
- a precoding of the answers was performed, considering their heterogeneous character;
- limitations regarding the elaboration of the online questionnaire imposed by the conditions of the Google Forms platform.

3. The structure of the investigated group

Table 1. Batch structure depending on the area of residence

Residence	Answers	
	%	Number of respondents
Urban	79,4%	593
Rural	20,6%	154
TOTAL	100%	747

We find from table 1 that most of the students participating in the survey come from urban areas (79.4%). Only 20.6% live in rural areas. Promoting entrepreneurship is essential in both types of communities, rural and urban.

Table 2. Batch structure according to age category

Age category	Answers	
	%	Number of respondents
Under 25 years old	67,3%	503
25-54 years	32,7%	244
TOTAL	100%	747

Naturally, most students are young: 67.3% of them have 67.3%. At the same time, 32.7% are between 25 and 54 years old. Therefore, the conclusions of the research take into account young people, who attend the courses of a higher education institution with a medical profile.

Table 3. Batch structure by gender

Gender	Answers	
	%	Number of respondents
Female	77,4%	578
Male	22,6%	169
TOTAL	100%	747

The predominance of the female gender at the level of the investigated group is noteworthy, which represents 77.4%. On the other hand, male students are represented in proportion of 22.6%.

Table 4. Batch structure according to the year of study

What college year (master's, doctorate or postdoctoral) are you currently in?	Answers	
	%	Number of respondents
Year I	8%	60
Year II	19%	142
Year III	17,1%	128
Year IV	22,6%	169
Year V	16,2%	121
Year VI	16,3%	122
Another	0,5%	5
TOTAL	100%	747

We find that the distribution of the research group according to the year of study largely respects the distribution of the statistical population, in the sense that most students are from the middle years. Most of them are enrolled in year IV (22.6%), and the fewest (8%) in year I.

Table 5. The structure of the group according to the year of specialization obtained after completing the studies

The specialization (title) that you will obtain after graduating:	**Answers**	
	%	Number of respondents
Dentist	55,2%	413
Nurse	14,6%	109
chemist	13,8%	103
Dental technician	11,1%	83
Doctor of Medical Sciences	1,6%	12
Doctor other specialties	1,6%	12
Physiotherapist	1,1%	10
Other	0,8%	5
TOTAL	100%	747

Regarding the degree that students will obtain after graduation, the majority (55.2%) will obtain the necessary qualification to practice the profession of dentist. The next profession in the ranking is that of nurse, a field for which 14.6% of students in the research group are prepared.

4. Presentation of results

Table 6. Willingness of students to open their own business after graduation

Would you like to open your own business in the field of specialization that you will obtain after completing your studies?	**Answers**	
	%	Number of respondents
Yes	76,2%	569
No	15,1%	113
DK / DA	8,7%	65
TOTAL	100%	747

The largest share of students surveyed (76.2%) are interested in opening a business after graduation. The percentage is encouraging and highlights the importance of projects and programs to encourage entrepreneurship among this category of the population. Next, we set out to highlight the resources that students have at their disposal, namely their needs in terms of starting a business.

Table 7. Respondents' perception of the current level of information on the benefits of participation

In your opinion, is there currently enough information on the benefits of participating in entrepreneurial training activities?	**Answers**	
	%	Number of respondents
Yes	30,5%	174
No	63%	359
DK / DA	6,3%	36
TOTAL	100%	569

Worryingly, most respondents, 63%, believe that there is insufficient information on the benefits of participating in entrepreneurship training. This finding draws attention to the need for information programs for students on training opportunities in entrepreneurship, especially in view of their willingness to start businesses in the fields in which they have specialized.

Table 8. The importance that students attach to the various aspects of starting a business

In your opinion, what action do you consider a priority to support students / masters / doctoral students in opening their own business?						
	Very important	Important enough	Somewhat important	Unimportant	The least important	TOTAL
Information and awareness campaigns	41,5% (236)	14,2% (81)	18,8% (102)	17,9% (87)	11,1% (63)	100% (569)
Vocational training in entrepreneurship	42,2% (240)	18,3% (104)	14,6% (83)	15,1% (86)	9,8% (56)	100% (569)
(acquisition of theoretical knowledge)	54,3% (309)	9,3% (53)	13,5% (77)	15,1% (86)	7,7% (44)	100% (569)
Counseling in the development of entrepreneurial skills	52,2% (297)	12,3% (70)	12,1% (69)	14,9% (85)	8,4% (48)	100% (569)

Among the aspects related to starting a business, the most important aspect evoked by the respondents is counseling in the development of entrepreneurial skills (practical applications of entrepreneurship under the

coordination of a specialist), which 54.3% consider very important. At the same time, if we add the weight of the "very important" and "important" options for the option "entrepreneurship consulting and receiving grants", we get 64.5%. Both aspects lead to the same conclusion, namely the need to expand counseling and guidance programs. At the same time, 42.2% of respondents consider vocational training in entrepreneurship (acquisition of theoretical knowledge) to be very important.

Table 9. The degree of adequacy of the financial resources available to support the student, regarding the chance of starting his own business

Currently, how do you assess the financial resources available to support the student, regarding the chance of starting his own business, after completing his studies?	**Answers**	
	%	Number of respondents
Sufficient	15,3%	87
Insufficient	78,9%	449
DK/DA	5,8%	33
TOTAL	100%	569

We note that the vast majority of respondents, respectively 78.9%, assess as insufficient the financial resources available to support the student to start their own business. Only 15.3% appreciate these resources as sufficient.

Table 10. Share of students who participated in a vocational training course in entrepreneurship (in the last 3 years)

Have you participated in a professional training course in entrepreneurship (in the last 3 years)?	**Answers**	
	%	Number of respondents
Yes	14,2%	81
No	85,1%	484
DK / DA	0,7%	4
TOTAL	100%	569

The share of students who, in the last 2 years, have participated in a vocational training course in the field of entrepreneurship is relatively small: only 14.2% attended such courses during the mentioned period. Next, we were

interested in identifying the degree of availability of students regarding the attendance of vocational training programs in the entrepreneurial field.

Table 11. Willingness of students to participate in a free training course in entrepreneurship

Would you like to attend a free training course in entrepreneurship?	**Answers**	
	%	Number of respondents
Yes	92,8%	528
No	4,6%	26
DK / DA	2,6%	15
TOTAL	100%	569

The vast majority of survey participants (92.8%) are interested in participating in a free training course in entrepreneurship, which is in line with previous conclusions. Only 4.6% of them are not interested in attending such a course, while 2.6% are undecided.

Table 12. Identifying the needs of vocational training students in the field of entrepreneurship

Please express your opinion on your need for professional training in entrepreneurship:	**Answers**	
	%	Number of mentions
Acquiring skills to develop a business plan	32,1%	394
Development of useful personal skills (communication, teamwork)	24,8%	305
Access to modern alternative methods of continuous training in the field of entrepreneurship	22,1%	271
Improving the level of skills in entrepreneurship	21%	258
TOTAL	100%	1228

Respondents were able to opt for several answer options (multiple choice question). The table shows the total evocations for each response variant. We note that the most frequently mentioned need refers to the acquisition of skills for developing a business plan, which was mentioned by no less than 394 of the students surveyed. This is followed by the development of useful personal skills (communication, teamwork), a variant selected by 305 of them. Therefore, entrepreneurship courses are needed for students to build on the

business design (business plan) and improve the qualities, skills and personal abilities that students need to become good entrepreneurs.

Table 13. The usefulness of entrepreneurial training courses felt by students

To what extent do you consider that participating in and graduating from an entrepreneurship training course will help you in developing a business plan for setting up a business in the field of your specialization?	**Answers**	
	%	Number of respondents
To a very large extent	41,1%	233
Largely	40,2%	229
To some extent	17%	98
To a small extent	1,2%	7
To a very small extent	0,4%	2
TOTAL	100%	569

The surveyed students consider to a large extent (41.1%) and to a large extent (40.2%) that participating in an entrepreneurial training course would help them to properly develop a business plan for setting up a business in the field of who specializes. Only 9 students do not see the usefulness of such an initiative.

Table 14. Areas of smart specialization in which students want to open businesses

In which areas of smart specialization would you like to start a business?	**Answers**	
	%	Număr de mentions
Health and pharmaceuticals	71,4%	508
Creative industries	5,8%	41
Tourism and ecotourism	4,8%	34
Information and communication technology	4,1%	29
Bioeconomics (agriculture, forestry, fisheries and aquaculture), biopharmaceuticals and biotechnologies.	3,7%	26
Energy and environmental management	3,2%	23

Food and beverage processing	2,7%	19
Construction	2,4%	17
Automotive and components industry	2%	14
TOTAL	100%	711

And in this case, the respondents could opt for several answer options (multiple choice question). The table shows the total evocations for each response variant. We also mention that, in formulating the item, we took into account the areas of smart specialization mentioned in the National Strategy for Competitiveness. Given the specific profile of students - training in the medical field - the vast majority of survey participants are interested in opening a business in the field of health and pharmaceuticals (71.4% of evocations, equivalent to 508 responses).

Table 15. Business initiatives in the field of health and pharmaceuticals

If you want to start a business in the field of health and pharmaceuticals, which of the following activities would you consider:	**Answers**	
	%	Number of mentions
Dentistry offices	61,3%	349
Polyclinic of dentistry	32,5%	185
Dental technique laboratory	23,4%	133
Pharmacy	13,4%	76
Radiology Service	14,8%	84
Medical recovery and rehabilitation center	8,1%	46
Another activity	6,7%	38
TOTAL	100%	569

Consistent with the structure of the exploratory group, where students from the Dentistry specialization predominate, most respondents are interested in opening offices in this sector of activity, mentioned by 61.3% of students. On the next position are the polyclinics, also in the field of dentistry (32.5%), followed by dental laboratories (23.4%).

We mention that, in this section, we presented in detail the data obtained for the most important items of the questionnaire. Correlations between them, but also other trends that are worth mentioning, will be presented in the conclusions and discussion section.

5. Conclusions and discussion

1. The vast majority of respondents (76.2%), respectively 569 students out of the 747 students who gave their consent to have their personal data processed, want to open a business in the field of specialization that they will obtain after completion of studies.

2. At the same time, more than half of the students surveyed (63%) believe that there is insufficient information on the benefits of participating in entrepreneurship training activities. Only 30.5% believe that there is enough information in this regard.

3. Among the actions designed to support students who want to start a business, counseling in the development of entrepreneurial skills was most often mentioned as the most important thing (53.4%).

4. Only 15.3% of the surveyed students who want to open a business believe that there are sufficient financial resources to support students, regarding the chance of starting their own business, after completing their studies. 78.9% state that the available resources are insufficient.

5. The vast majority of students surveyed (85.1%, respectively 484 out of 569) who want to start a business have not participated in a training course in entrepreneurship in the last 3 years. Most of them (92.8% and 528 respectively) expressed their willingness to participate in a free course in entrepreneurship.

6. Consistent with the answers given to the previous questions, 24.8% (305) of students who want to start a business consider it a priority to improve their entrepreneurial skills. At the same time, 32.1% (394) of them expressed the need to acquire new skills for developing a business plan.

7. Most surveyed students interested in starting a business believe that participating in and completing an entrepreneurship training course will help them greatly (41.1% and 233 respondents, respectively) and greatly (40.2%). , respectively 229 respondents) in the elaboration of a business plan, for the establishment of a business in the field in which they specialize.

8. Regarding the counties where students want to start businesses, the most frequently mentioned was Dolj county (391 respondents), followed, at a great distance, by Olt county (35 respondents), respectively Argeș (31) and Gorj (18).

9. Potential entrepreneurs feel very much the need for advice for developing and implementing a business plan, respectively for business management. 81.9% (466) of the surveyed students who want to start a business expressed this need.

10. Among the areas of smart specialization provided by the National Strategy for Competitiveness 2015-2020 and taken into account in this study, the most frequently mentioned was Health and pharmaceuticals, for which 71.4% (508) of respondents opted. At the same time, dental offices (61.3%) are the main type of business mentioned by the respondents who opted for this field. These are followed by dental polyclinics, with 32.5%.

11. Most of the subjects in the research group wishing to start a business (79.1% and 450 respondents, respectively) expressed their desire to get involved in the project and participate in a business plan competition, in the aim of obtaining funding, which demonstrates the increased interest of the target group, the innovative potential and the desire to get involved.

12. Most students who want to start a business live in urban areas (464). Only 105 students from rural areas said they were interested in starting a business.

13. The dominant age group among potential entrepreneurs is under 25 (396 of the 569 students interested in starting a business).

14. There is a high number of women (423) who want to start a business, in contrast to the relatively small number of men (146).

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