DIGITALIZATION OF THE FINANCIAL SYSTEM AND THE SHADOW ECONOMY: INSIGHTS FROM FUTURE TAXATION EXPERTS

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Abstract
This study analyzes and presents the perceptions of young specialists in taxation regarding the underground economy and the role of digitalization in reducing it. For this purpose, a survey was conducted among students of the Master's program in Taxation at the Bucharest University of Economic Studies, with a total of 43 responses. The results show that a large proportion of students define the underground economy as "undeclared work," "tax evasion," or "undeclared economic activities". The most frequent reasons identified by students for the existence of the underground economy are high taxes, corruption, and complex regulations. Furthermore, they argue that the most effective method to educate citizens about the impact of the underground economy is formal education in schools and universities. When asked if they would report a person involved in the underground economy, more than half of the respondents answered affirmatively. Regarding the role of digitalization, students expressed openness to using digital payments and using as little cash as possible. In addition, their opinion is that the percentage of the underground economy will significantly decrease in the context of a future with initiatives to digitalize the financial system. Therefore, analyzing students' perceptions of these aspects is not only relevant from an academic point of view but also crucial for formulating effective public policies to support a more open and transparent economy.

Keywords
Underground economy, Digitalization, Online Payments, Cash, Information System

JEL Classification
E26, H21, O33

Introduction

Digitalization has become an essential phenomenon in the transformation of the modern economy, significantly influencing the way the population interacts with financial and commercial services (Visa & Kearney, 2023). The shadow economy, often referred to as

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the informal or underground economy, constitutes economic activities that occur outside the view of official regulatory frameworks (Schneider & Enste, 2013). The shadow economy is known by various names, such as the grey economy or informal sector, encompasses both legal and illegal activities, contributing substantially to a country's actual wealth (IMF, 2021). Shadow economic activities are a fact of life around the world (Schneider F., 2005). An effective solution for preventing and combating the underground economy is the digitalization of government services. This can be achieved through the development of information and communication technology (Elbahnasawy, 2021). This facilitates not only the efficiency of financial operations but also their accessibility and transparency. Elbahnasawy (2021) investigates the relationship between e-governance and the underground economy. The findings provided by the study are that e-governance is a powerful tool to help reduce the informal economy. In the current context, where the COVID-19 pandemic has accelerated the adoption of digital technologies, it is important to understand the impact of digitalization on the underground economy and consumers' perception of this phenomenon. This study aims to define the concept of the digital underground economy from the perspective of students in the Master's program in Taxation and to identify measures that could discourage their participation in informal economic activities. Through a structured questionnaire, which includes 24 relevant questions, we intend to explore students' attitudes towards the underground economy, their familiarity with this concept, and the impact that digitalization can have on their economic behaviour. In a world where digital payments are becoming increasingly used, it is necessary for governments to adopt effective strategies to reduce the underground economy.

1. Review of the scientific literature

Numerous studies have highlighted the role of education and digitalization in reducing the shadow economy. Ștefoni & Draghia (2020) show that education significantly contributes to diminishing the informal economy, both by increasing awareness and by shaping ethical attitudes. Other research demonstrates that the expansion of electronic payments and the digitalization of fiscal services are associated with a decrease in the shadow economy (Teshaboev et al., 2021; Umoru & Usman, 2020). However, the literature also emphasizes the existence of barriers such as the lack of digital infrastructure, high costs, or public reluctance, which can limit the effects of digitalization (Butu et al., 2020). The present study aims to analyze these aspects from the perspective of future taxation specialists, a segment that has been insufficiently explored so far.

A relevant and current article by Brici, I., & Achim, M. V. (2023), which presents the effect of the digitalization of public services on the underground economy. The authors analyze how digitalization can influence corruption, the informal economy, and money laundering. They used a sample that includes 185 countries, both developed and developing countries. The authors found that the underground economy is decreasing in developed countries, where the level of digitalization is considerably high. Regarding money laundering, a decrease was observed in the context of the digitalization of public services for both groups. Moreover, it was observed that more countries are increasing their commitment to cybersecurity (Brici, I., & Achim, M. V., 2023). An effective solution for preventing and combating the underground economy is the digitalization of

government services. This can be achieved through the development of information and communication technology (Elbahnasawy, 2021). In their 2015 article, Gaspareniene, L., & Remeikiene, R. theoretically and empirically described the economic and demographic characteristics of people operating in the digital underground economy. Although in general, the characteristics of subjects in the digital underground economy are not very different from those of subjects in the traditional underground economy, expert evaluation allowed the identification of some distinct features of a seller in the illegal digital market. He is usually represented as a young or middle-aged man, with higher education, a professional in his field of activity, with a monthly income of up to 300 EUR. According to the research results, sellers in the digital underground economy include entities with officially registered activities, who try to avoid taxation of income obtained from operations carried out in the digital space. Demographically, they are predominantly men, aged between 18-29 years or 30-49 years with higher education. A study by Roubini ThoughtLab, commissioned by Visa, discusses the widespread adoption of electronic payments, such as cards and mobile payments, which are very useful. This could generate a total net benefit of up to $470 billion per year in 100 of the world's major cities, including Bucharest. "Cashless Cities: Evaluating the Benefits of Digital Payments" is a unique study that quantifies the potential net benefits that cities can enjoy by moving to an "achievable level of cashless," which estimates the immediate and long-term benefits of reducing dependence on cash for three main groups: consumers, companies, and public authorities. For the capital, the estimated benefits are that companies, public authorities, and consumers would obtain net benefits worth $400 million (over 1.5 billion lei) annually by increasing the share of electronic transactions in the total payments made in the capital by ten percentage points. The total estimated benefits would rise to almost $1.7 billion (6.5 billion lei) per year if Bucharest were to reach the maximum achievable level of cashless (i.e., 95% of payments being made by electronic means). Approximately 50% of the total payments made in Bucharest are currently cashless, and for the most active 10% of digital payment users, the percentage rises to 95% (Visa & Kearney, 2023). Recent research indicates that artificial intelligence can automate almost 80% of physical work, 70% of data processing, and 64% of data collection tasks, highlighting a significant potential for public sector efficiency and optimizing proactive services to citizens (Visa & Kearney, 2023). Ștefoni and Draghia (2020) focused on the effective implementation of government policies, including those related to education, to increase the number of taxpayers. Their study, covering 28 European Union countries over 20 years (1996-2015), empirically estimated the relationship through fixed and random effects models. The results indicated a negative association between education and the informal economy. Additionally, efficient public services evidently had a negative relationship with the shadow economy.

With the expansion of the field of digitalization and the increasing transfer of transactions to the electronic space, the number of illegal digital operators increases and promotes consumer involvement in the digital underground trade. However, from the research conducted, the concept of the digital underground economy from the perspective of consumers has been very little researched. Researching consumer attitudes towards the digital underground economy is significant from a scientific point of view for several reasons. Firstly, formulating the concept of the underground economy would allow

defining the gap between official and unofficial economies, allowing consumers to make a conscious decision regarding participation or withdrawal from digital underground activities. Secondly, defining the concept of the digital underground economy from the perspective of consumers would contribute to the development of measures aimed at managing and controlling this phenomenon (Gaspareniene, L., Remeikiene, R., & Navickas, V., 2016).

In the group of terms that reflect the nature of digital underground activities, the term digital underground economy refers to hidden, profit-oriented online commerce (Moore et al., 2009), or, in other words, profit-oriented but unregistered online commerce. This differs slightly from the term "illegal digital economy," which emphasizes the violation of defined legal regulations regarding commerce, rather than the pursuit of profit. Digitalization of payment programs and government payments can make a significant difference and reduce the underground economy, transactions being much easier to be verified and accounted for, with everything becoming much more transparent. Digital payments help governments provide financial support to people in need. A study by Bontadini et al. (2024) on the level of digitalization in 21 OECD countries (1995-2018) details the digitalization of the financial sector, showing a significant increase in digitalization at different speeds and intensities between countries. For example, financial digitalization in the US has increased rapidly and steadily, an increase characterized by a higher level of investment than intermediate consumption. In contrast, in Europe, the digitalization of the financial sector was achieved to a greater extent through the acquisition of digital services than through investments in information and communication technology (ICT). Digitalization in the financial sector in the United Kingdom increased rapidly before the financial crisis and then stagnated, although at high levels. On the other hand, in Germany, the financial sector experienced a constant digital transformation. In Italy, the digitalization of the financial system ceased to increase after the financial crisis and eventually decreased, determined by the stagnation of investments and the reduction of intermediate consumption. Financial education, like all forms of education, can greatly benefit from new technologies, which enable reaching a broader audience, customizing educational content to individual needs, utilizing innovative teaching tools, and designing more efficient and effective assessment methods. However, it is crucial to ensure that the digital divide-whether geographical, generational, or socio-economic-does not become an additional source of financial exclusion. While technology has the potential to democratize access to financial knowledge and empower individuals to make informed decisions, disparities in digital literacy and access to digital infrastructure may leave vulnerable groups behind, thus exacerbating existing inequalities (Signorini, 2022).

Reducing the underground economy is an essential element that governments pursue. A study by Visa and Kearney in 2023 highlights a strong inverse correlation between the informal economy and digital payments. Thus, cash facilitates the maintenance of informal economic activities away from the supervision of the authorities. Based on these findings, the study projected that a 5% increase in digital payments per year, for five consecutive years, could reduce the informal economy by 11-13%. This could also have a significant impact on tax revenues, increasing them by up to 1.7% in the US or 3.5% in Italy (Visa & Kearney, 2023). Governments can be broadly categorized into two types:

analogue and digital. The former relies heavily on paper documents, in-person procedures, and manual execution. In contrast, highly digitalized governments prioritize meeting the needs of citizens and businesses, making collaboration and data sharing between government entities very easy. Digitalized payments between individuals and the government, as well as between businesses and the government, can broaden the revenue collection base, increase government income, reduce financial leaks, lower administrative costs, and in turn, significantly shrink the shadow economy, potentially even making it negligible. Estonia strongly demonstrates this, having implemented digital services across all public sectors. Estonia estimates that the mere implementation of digital signatures generates annual savings equivalent to 2% of its GDP. Simultaneously, its data exchange system, X-Road, which digitally connects 99% of government services, saves over 820 years of working time annually for the state and its citizens (Visa, 2023). Estonia is a prime example of a nation where digitalization works flawlessly: paying taxes as an individual takes roughly three minutes, and if any data is missing, it can be quickly filled in.

Another example of how digitalization can help control the shadow economy comes from the United Kingdom, where HMRC's Connect system gathers data from 40 datasets and 600 million documents—including bank accounts, credit and debit card records, e-commerce sites, and more—to identify spending patterns that don't align with individuals' reported tax returns. The system, which cost approximately £90 million (US$124 million) to develop, is estimated to have helped secure an additional £3 billion in tax revenue, equivalent to US$4.1 billion (Visa & Kearney, 2023). Similarly, in Slovenia, the Ministry of Finance has used artificial intelligence to detect tax evasion schemes, tax fraud, and identify errors in tax reports. In 2017, the administration listed 158 risk factors and used them to select approximately 17,500 individuals and companies for tax inspection. Inspectors found irregularities in over 75% of all selected cases. Estonia stands out as one of the most digitally advanced public sectors globally. The country has an online platform that allows citizens and businesses to access 3,000 fully digital government e-services. Remarkably, 99% of all banking transactions occur online. Business owners can establish and run global operations entirely online. To facilitate this, the government has forged close collaborative partnerships with private companies, including financial institutions and technology providers. Furthermore, 82% of e-Estonia platform users report satisfaction with the electronic public services and platform, saving an average of five working days per year. A clear advantage of Estonia's tax system is that companies spend less time on tax compliance than they would in any other OECD country.

2. Research methodology

The central hypothesis this research explores is to understand how students enrolled in a Master's program in Taxation, who will be future specialists in this field, perceive the shadow economy and the impact of digitalization on it. This study employed a questionnaire distributed to these students, comprising 24 questions and the most relevant questions were included in this article. These questions covered both demographic information, such as age, occupation, and gender, and aspects related to the respondents' familiarity with the concept of the shadow economy. The questionnaires were shared through online platforms, and the interaction with the students was open and transparent

within the classroom setting. This allowed for discussions about the subject matter and for addressing any uncertainties the students had regarding the questions they needed to answer. The time required for completion was approximately ten minutes. The first part of the questionnaire focused on identifying the demographic characteristics of the respondents, including their age, gender, salary level, professional status, and academic background in economics. The second part concentrated on assessing the students' perceptions of the shadow economy, covering aspects like their level of familiarity with the concept, the reasons behind its existence, and the methods they believed to be effective for educating the public about it. The third part analyzed the students' opinions regarding the digitalization of the tax system, investigating their perceptions of the impact of digital payments on the shadow economy and the effectiveness of government initiatives in promoting electronic transactions. The study's findings, gathered from a sample of 43 respondents, offer insight into how future tax professionals perceive the challenges and solutions associated with the shadow economy. The studied sample was predominantly female. Out of the total of 43 participants, 27 were female (approximately 63%), and 16 were male (approximately 37%). This indicates a higher representation of women in the studied sample. The conclusions emphasize the importance of tax education and digitalization as essential tools in reducing the phenomenon of the shadow economy. Most students (67.44%) indicated they were partially familiar with the shadow economy, suggesting a basic but not in-depth understanding of the issue. It is important to mention that the study was conducted on students enrolled in the Master's program in Taxation, who were in their first and second year of study. The confidence level is 90%, and the margin of error is 10%. The analysis and correlations were performed using Excel software.

3. Results and discussion

The main objective of this article is to highlight the perceptions of future taxation specialists regarding the shadow economy and the impact of digitalization on it. The research aims to answer the question: "How do master's students in taxation perceive the phenomenon of the shadow economy and the ways in which digitalization can contribute to its reduction?" The questionnaire included both demographic questions (age, occupation, gender) and questions concerning the respondents' level of knowledge and attitudes towards the shadow economy and digitalization. By analyzing the responses, we sought to identify the students' level of awareness, their familiarity with key concepts, and their opinions on the effectiveness of digitalization in combating the shadow economy. Thus, we aimed to determine whether the respondents would engage in practices specific to the shadow economy, whether they would report individuals involved in such activities, and what their opinions are regarding the behaviour of those who participate in the shadow economy. Through the questionnaire, we aimed to capture not only the students' theoretical knowledge but also their willingness to act ethically in their future professional careers.

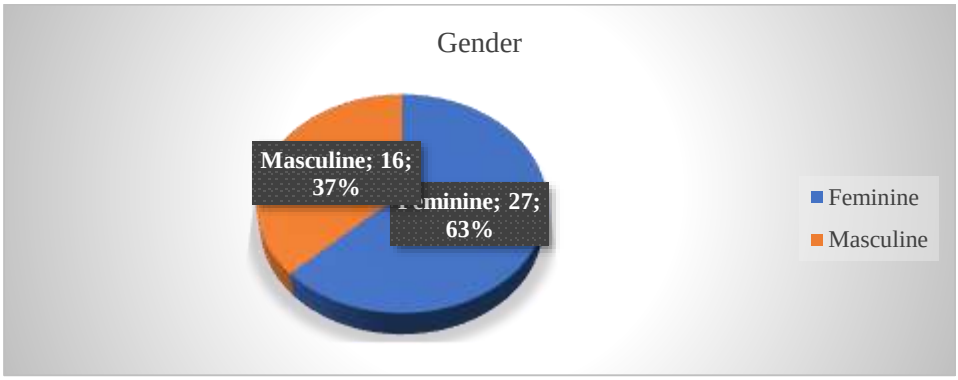

Figure no. 1 – Structure of the respondents by gender
Source: self-elaboration based on questionnaire responses using Excel

The graphic illustrates the distribution of respondents by sex. Out of the 43 participants in total, 27 identified as female (approximately 63%), while 16 identified as male (approximately 37%). This indicates that the studied sample had a higher representation of women.

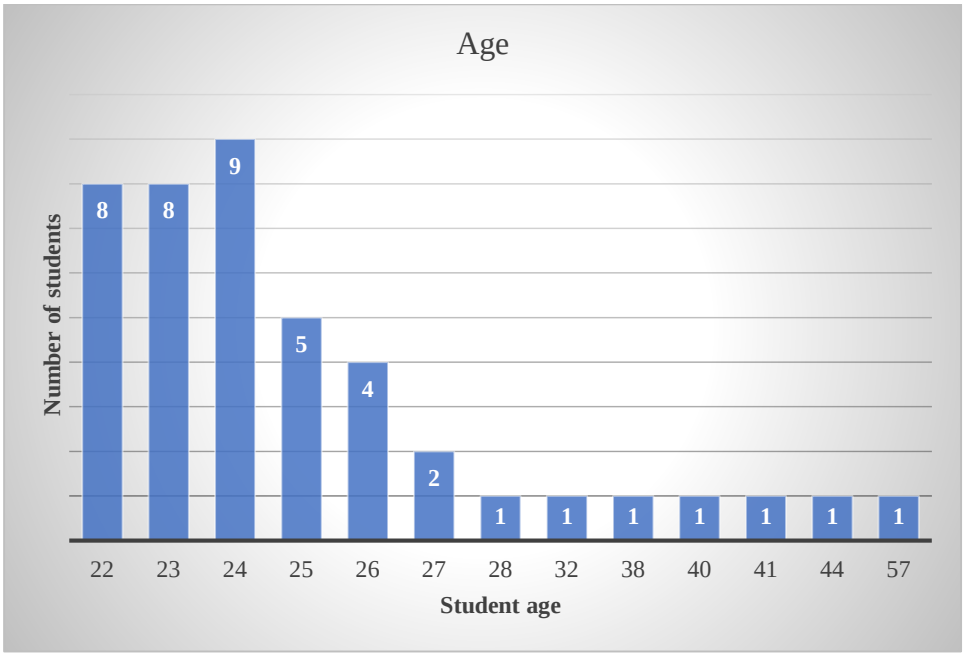

Figure no. 2 – Structure of the respondents by age
Source: self-elaboration based on questionnaire responses using Excel

The graphic presents the age distribution of the students. The horizontal axis (labelled "Student Age") displays ages ranging from 22 to 57 years. The vertical axis (labelled "Number of Students") shows the count of students for each age. The most common age is 24, with 9 students. The ages of 22 and 23 are also well-represented, each having 8 students. Following the age of 24, the number of students gradually declines. There are a few older students, with single individuals in each of the following age groups: 32, 38, 40, 41, 44, and 57. Notably, there is a significant drop in the number of students after the age of 26.

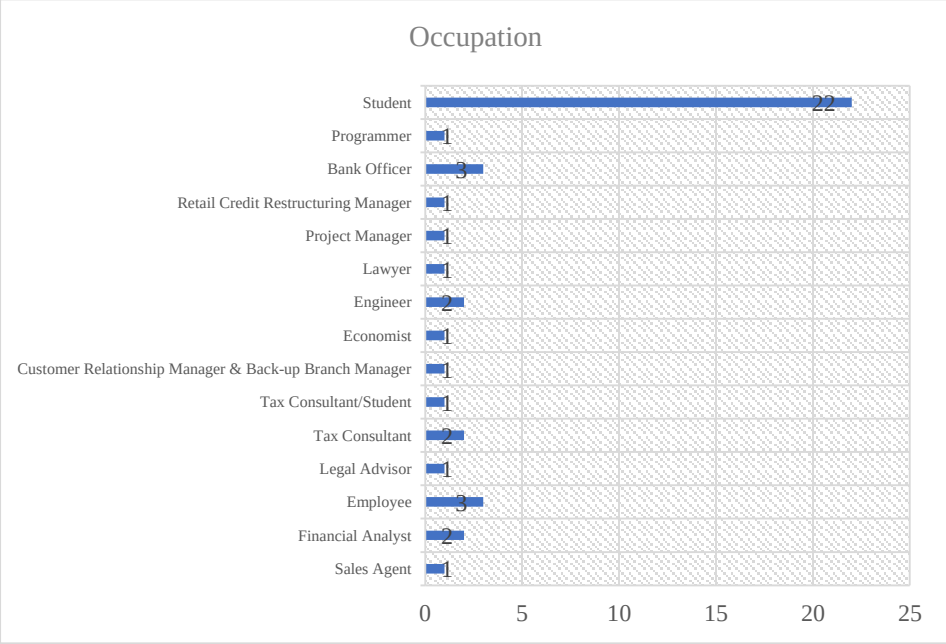

Figure no. 3 – Structure of the respondents by occupation
*Source***:** self-elaboration based on questionnaire responses using Excel

The graphic illustrates the distribution of respondents by occupation. Most participants are students, totalling 22 individuals. Following this, in descending order, are bank officers and employees, with 3 respondents each. There are 2 tax consultants. The remaining occupations – sales agent, customer relationship manager, engineer, and project manager – each have one respondent.

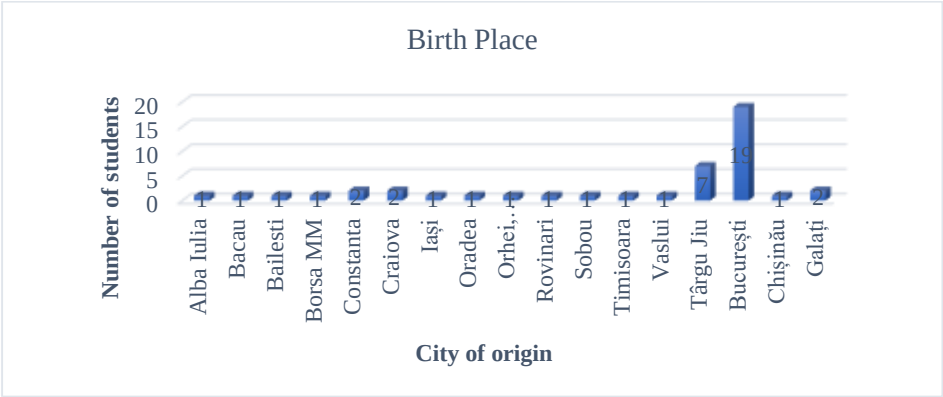

Figure no. 4 – Structure of the respondents by birth place
Source: self-elaboration based on questionnaire responses using Excel

The graphic illustrates the students' responses regarding their hometowns. The horizontal axis lists the cities of origin, while the vertical axis indicates the number of students who mentioned each city. The graphic highlights a significant concentration of students originating from Bucharest, with other cities being represented to a much smaller degree.

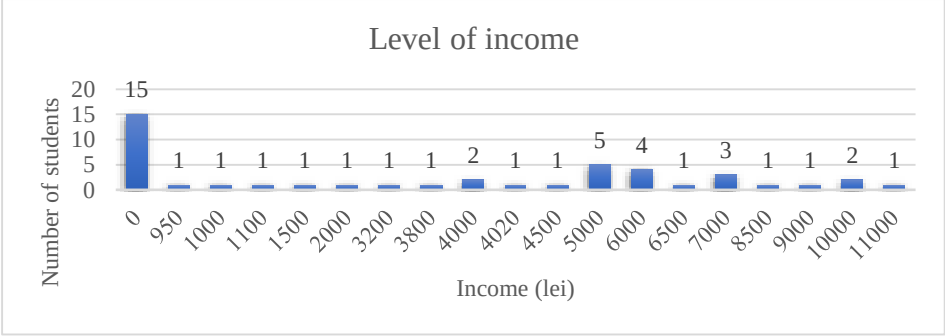

Figure no. 5 – Structure of the respondents by income level
Source: self-elaboration based on questionnaire responses using Excel

The graphic illustrates the distribution of salary income levels (in Romanian Lei) among a group of students. The horizontal axis indicates the salary levels (in Lei), while the vertical axis represents the number of students within each income bracket. The distribution reveals that most students either do not have any salary income or earn very low incomes. Only a small proportion of students report higher salaries, and those with significant earnings (over 6,000 Lei) are few. The calculated average income level for this group is 3,679.33 Lei.
Figure 6

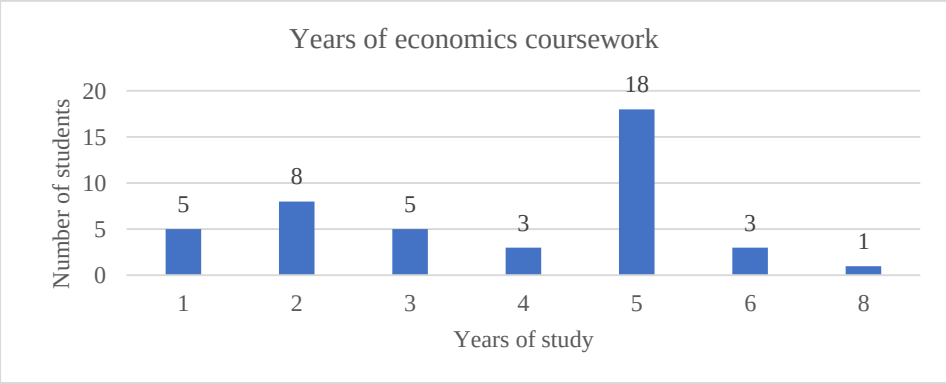

Figure no. 6 - Structure of the respondents by years of economics coursework
Source: self-elaboration based on questionnaire responses using Excel

The graphic illustrates the distribution of students according to the number of years they have studied economics-related subjects. Most students (18) have studied disciplines within the field of economics for 5 years, while a significant number (8) have studied for only 2 years. The number of students decreases considerably for study periods of 4, 6, and 8 years.

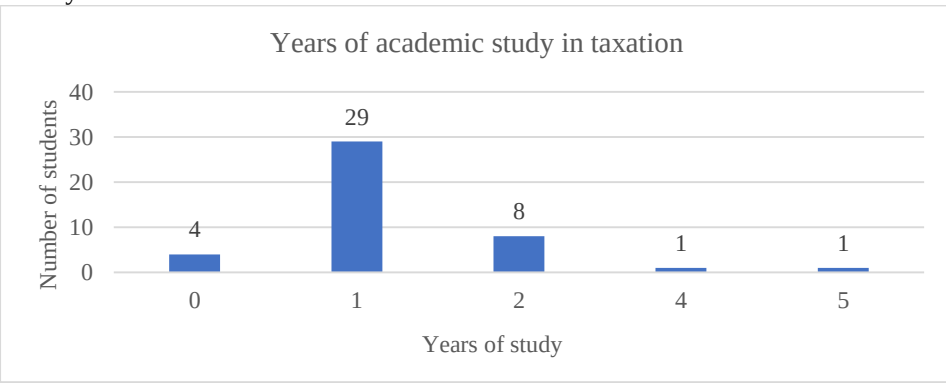

Figure no. 7 - Structure of the respondents by years of academic study in Taxation
Source: self-elaboration based on questionnaire responses using Excel

The graphic illustrates the distribution of students based on the number of years they have studied Taxation. Most students (67.4%) have studied taxation for one year, while 18.6% have continued for two years. A smaller proportion, 9.3%, have not studied taxation at all, and only 4.6% have engaged with the subject for four or five years. This distribution suggests that taxation is most studied for a single year, with longer periods of study being less frequent.

3.1. Perception of Respondents on Shadow Economy

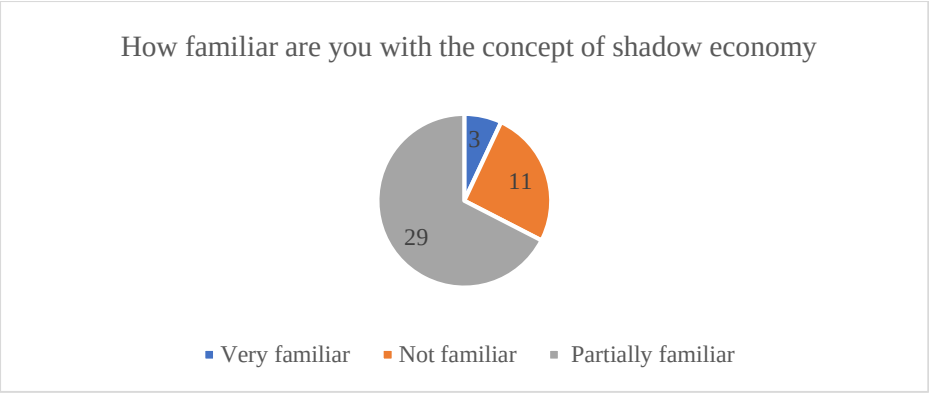

Figure no. 8 - Students' familiarity with the concept of shadow economy
Source: self-elaboration based on questionnaire responses using Excel

Out of the total of 43 respondents (16 male and 27 female), 3 reported being very familiar with the subject (12.5% of the male respondents and 3.7% of the female respondents), 29 indicated they were partially familiar (62.5% of males and 70.4% of females), and 11 stated they were not at all familiar (25% of males and 25.9% of females). This distribution reveals that males were more represented in the "very familiar" category, while a slightly higher percentage of females reported being partially familiar. The proportion of those not familiar at all was nearly equal between the two groups. These findings suggest that while most respondents possess at least a basic understanding of the shadow economy, there is a need for more in-depth exploration and further education on this topic.

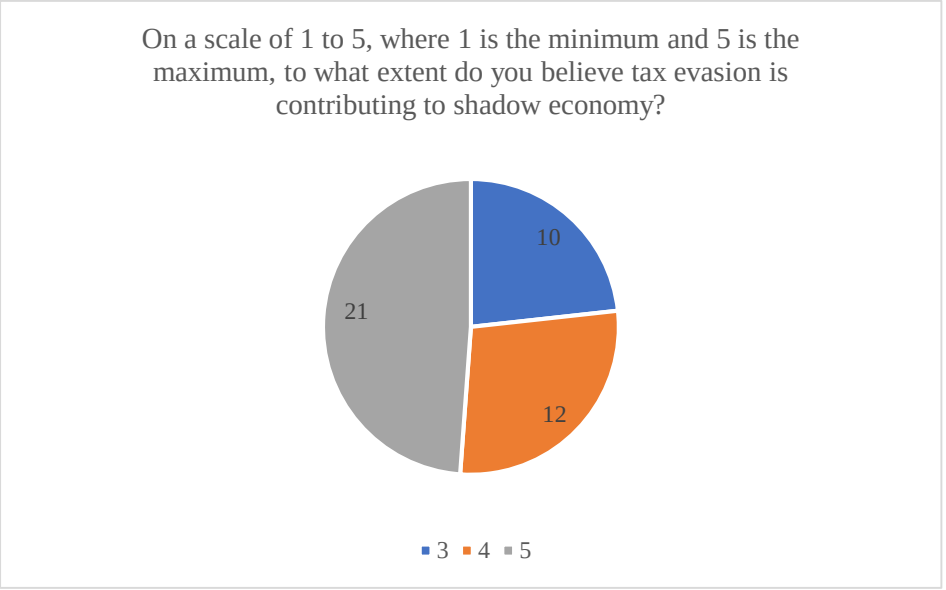

Figure no. 9 - Students' perceptions of the extent to which tax evasion contributes to the shadow economy (scale 1–5)

Source: self-elaboration based on questionnaire responses using Excel

The graphic presents the students' responses to the question regarding the impact of tax evasion on the shadow economy, using a scale from 1 to 5 (where 1 represents minimal impact and 5 represents maximal impact). Notably, most respondents selected a value of 5 (21 respondents), indicating a strong perception of tax evasion's influence on the shadow economy. The next most frequent response was 4, chosen by 12 students, further confirming that a significant portion views this factor as highly influential. A smaller percentage, 23%, opted for a value of 3, suggesting a moderate perception of the impact of tax evasion. Values of 1 and 2 were not selected by any respondents, indicating that all participants believe tax evasion plays a significant role in the shadow economy, albeit to varying degrees.

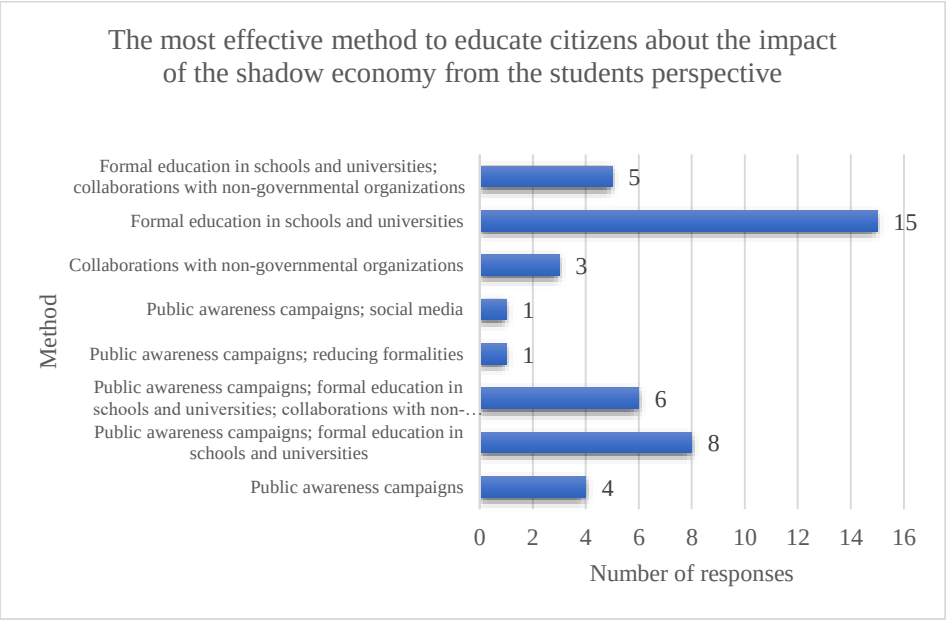

Figure no. 10 - The most effective method to educate citizens about the impact of the shadow economy from the students' perspective
*Source***:** self-elaboration based on questionnaire responses using Excel

The graphic presents students' opinions on the most effective methods for educating citizens about the impact of the shadow economy. The horizontal axis represents the number of responses, while the vertical axis lists the proposed methods. The most popular method identified by students is "Formal education in schools and universities," chosen by 15 respondents, suggesting that systematic education is considered crucial for raising awareness about the shadow economy's impact. Other highly rated methods include "Public awareness campaigns and education," with 8 responses, and general "Public awareness campaigns," with 6 responses. Additionally, "Formal education combined with collaborations" was mentioned by 5 students, and "Collaboration with non-governmental organizations" received 3 votes. Less preferred methods include "Awareness campaigns through social media" and "Reducing corruption," each receiving 1 response. Therefore, most students believe that formal education and public awareness campaigns are the most effective ways to inform citizens about the impact of the shadow economy.

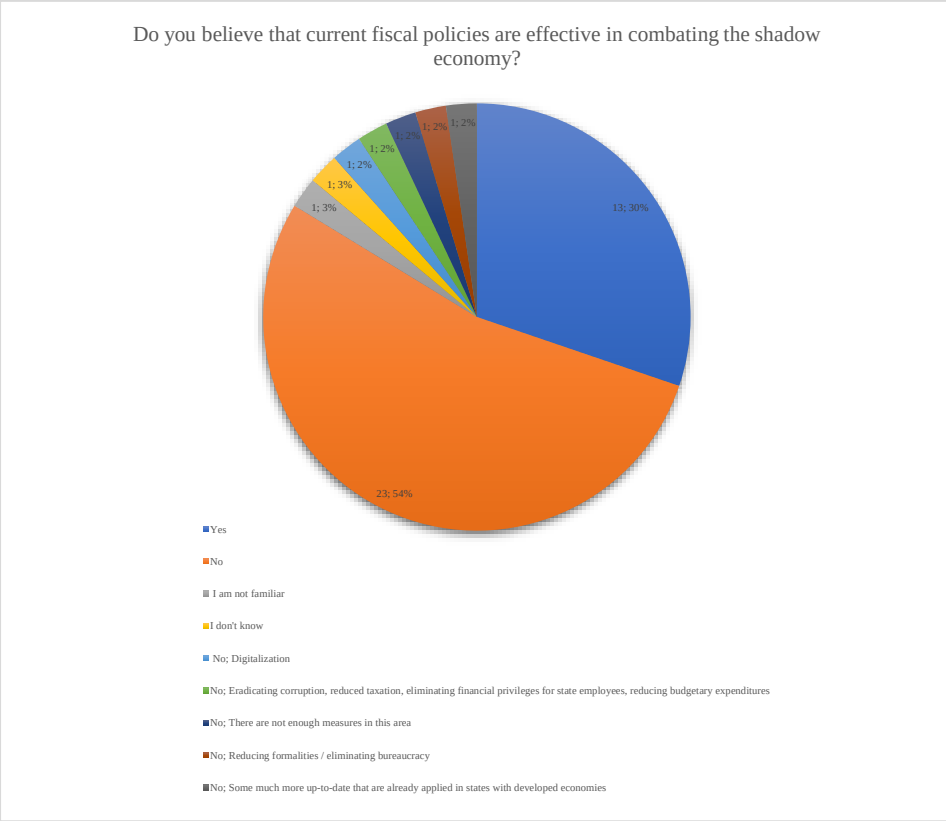

Figure no. 11 - Perceived effectiveness of current fiscal policies in combating the shadow economy among students

Source: self-elaboration based on questionnaire responses using Excel

This graphic, in the form of a pie chart, presents the responses to the question: "Do you believe that current fiscal policies are effective in combating the shadow economy?". The results show that 54% of respondents (23 individuals) believe that current fiscal policies are not effective and 30% (13 individuals) believe that they are effective.

Female respondents are more inclined to view the fiscal policies as effective (33.3%), although the majority (55.6%) still perceive them as ineffective. Male respondents are more critical (50% consider the policies ineffective) and emphasize the need for structural changes, such as combating corruption and adjusting public spending.

A small number of respondents (1-3%) provided more detailed answers, mentioning specific aspects like digitalization, reducing bureaucracy, eradicating fiscal corruption, and implementing more efficient measures similar to those in developed economies. The majority of those surveyed believe that current fiscal policies are not sufficiently effective in combating the shadow economy, and some offered potential solutions for improvement.

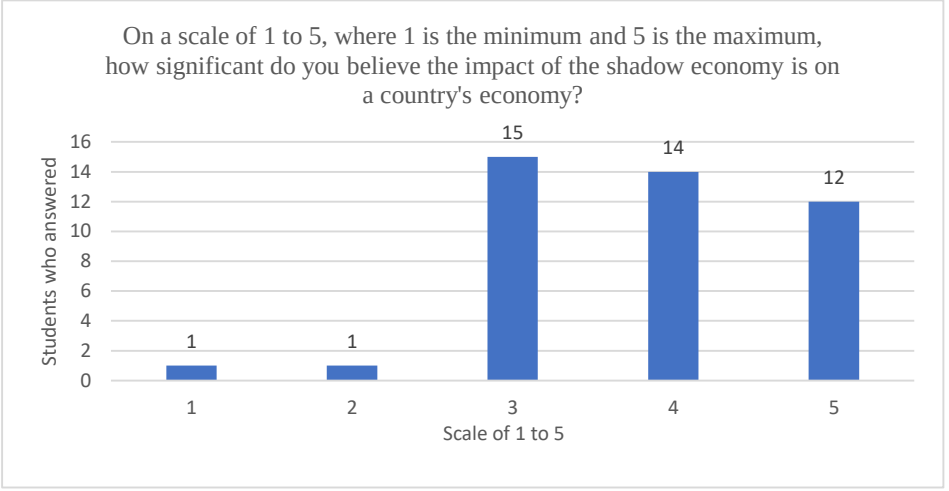

Figure no. 12 - Perceived significance of the shadow economy's impact on the national economy (scale 1–5)

*Source***:** self-elaboration based on questionnaire responses using Excel

This graphic presents the students' responses to the question regarding the impact of the shadow economy on a country's economy, using a scale from 1 to 5 (where 1 signifies minimal impact and 5 signifies maximal impact). The results indicate that:

Only 1 respondent considered the impact of the shadow economy to be minimal (score 1). Another single respondent gave a score of 2. The largest number of respondents (15) chose level 3, considering the impact to be moderate. 14 respondents opted for level 4, suggesting a significant impact. 12 respondents evaluated the impact as maximal (score 5).

Overall, most students perceive the shadow economy as having a substantial impact on a country's economy, with most responses falling between levels 3 and 5.

Most female respondents (55%) believe that the impact of the shadow economy is significant or very large (score 4 or 5), but a considerable percentage (37%) view it as moderate. Only 8% of women think the impact is low.

Male respondents hold a more decisive view: 69% of them chose a score of 4 or 5, considering the shadow economy to be a major problem. In contrast to women, no male respondent gave a score lower than 3. Women show a greater distribution of opinions, with a tendency towards moderation, while men have a more resolute view on the significant negative impact of the shadow economy.

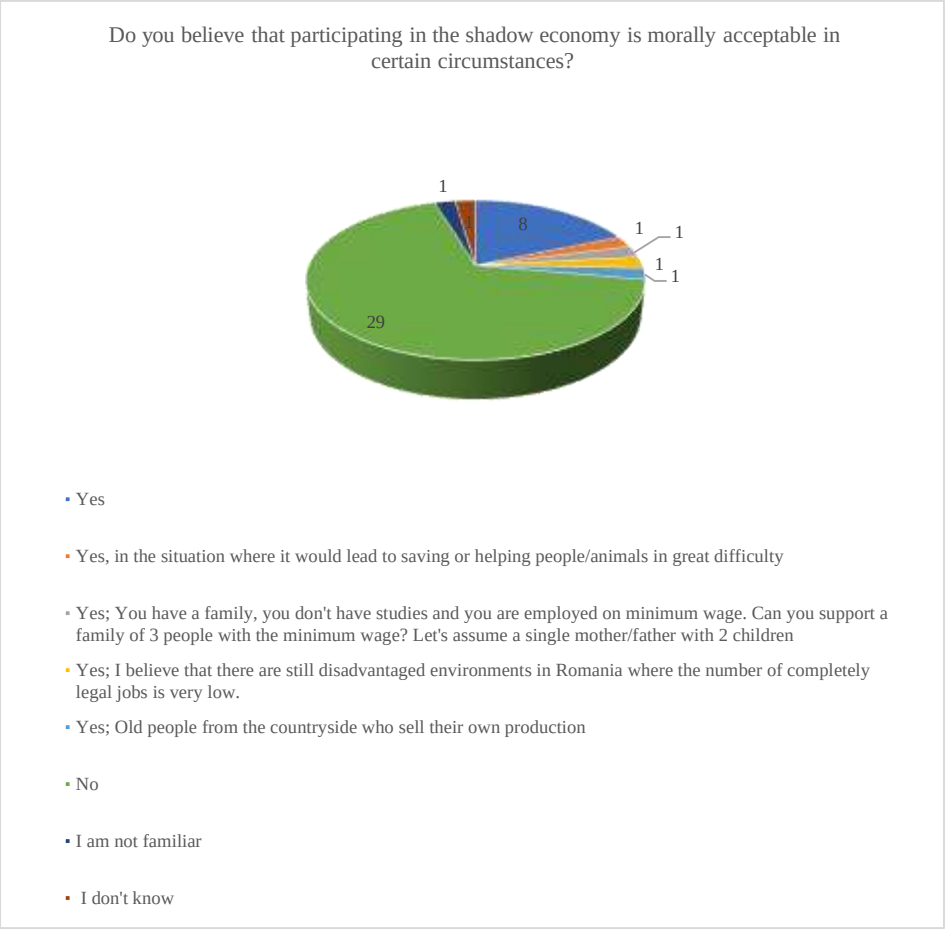

Figure no. 13 - Moral acceptability of shadow economy participation – students' perspective

*Source***:** self-elaboration based on questionnaire responses using Excel

The graphic presents the respondents' opinions regarding the morality of participating in the shadow economy under certain circumstances. While a significant portion (29 individuals, representing the largest segment in the pie chart who answered with a simple "No" without further conditions), indicating they generally do not find participation morally acceptable, a notable group (represented by the other segments totaling 14 individuals) believe that participation can be justified under specific conditions. The explanations from those who consider the shadow economy potentially morally acceptable relate to extreme situations, such as saving people in dire need, or the necessity of supporting a family with a very low income. Additionally, some emphasized that in certain regions of Romania where legal job opportunities are limited, it is difficult to

refuse involvement in the shadow economy. The cases of elderly individuals in rural areas selling their own produce to secure their livelihood were also mentioned.
Looking at the gender breakdown, female respondents are slightly more inclined to accept the shadow economy (29.6%) compared to male respondents (25%), but they are also more firm in their rejection of it (70.4% vs. 62.5%). Men show more uncertainty, with 12.5% not having a clear opinion, compared to 0% among women.
In conclusion, while a majority of respondents view involvement in the shadow economy as not morally acceptable, a significant minority perceive that under certain compelling conditions, it can be a morally acceptable choice.

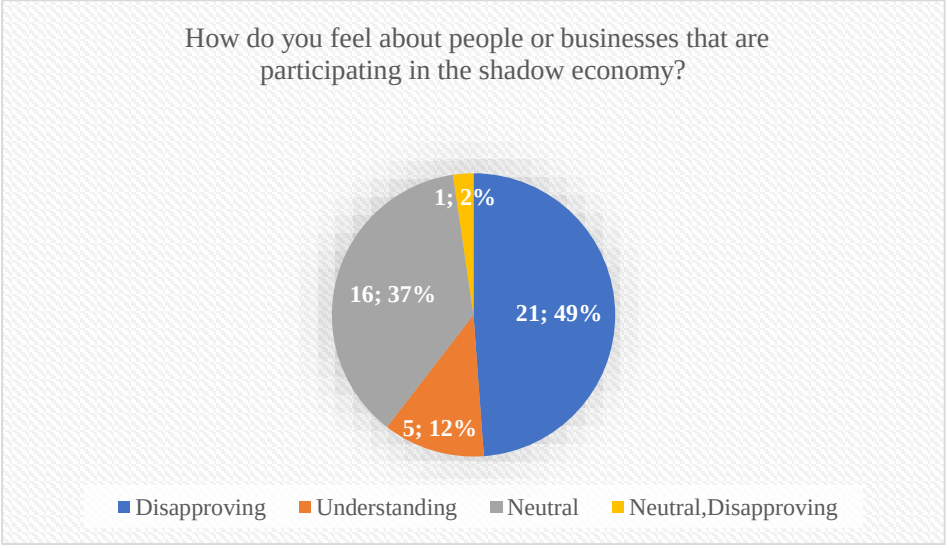

Figure no. 14 - How do you feel about people or businesses that are participating in the shadow economy?
Source: self-elaboration based on questionnaire responses using Excel

The graphic presents the responses to the question: "How do you feel about people or businesses that engage in shadow economic activities?". The results show that most respondents (21.49%) have a disapproving attitude towards individuals or businesses involved in the shadow economy. In contrast, a significant percentage of 16.37% of respondents are neutral towards these activities, and 5.12% have a more understanding attitude. Only 1.2% of participants chose the option "neutral and disapproving," suggesting a more nuanced approach to the subject. In conclusion, most respondents have a neutral or disapproving attitude towards involvement in the shadow economy, but there is also a small proportion of individuals who adopt a more understanding stance. Women are more critical (56.25%) than men (44.44%). Men are more inclined to adopt a neutral position (44.44%) compared to women (25%).

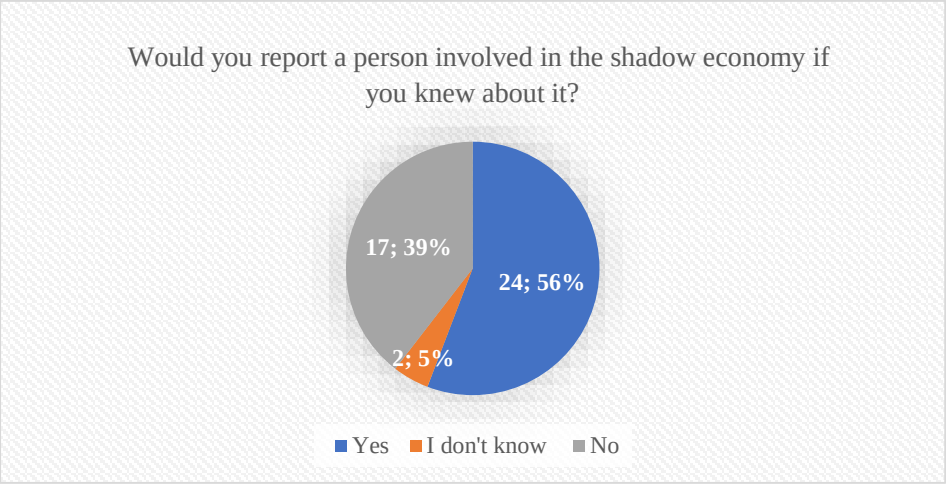

Figure no. 15 - Students' willingness to report a person involved in the shadow economy

Source: self-elaboration based on questionnaire responses using Excel

The graphic illustrates the responses to the question: "Would you report a person involved in the shadow economy if you knew about it?". According to the data, 24 respondents stated that they would report an individual involved in the shadow economy. Conversely, 17 respondents said they would not, while 2 respondents were unsure and did not know what they would do in that situation. In conclusion, a larger number of respondents would report someone involved in the shadow economy, while a notable portion would not.
When comparing genders, it can be observed that men are more inclined to take action (62.5%) than women (51.85%). Women are more reluctant to report (48.15%) compared to men (25%). Men have a more decisive stance (62.5% vs. 51.85%), while women show a greater division in their opinions.

3.2. Student's Perceptions of the Shadow Economy and Digitalization

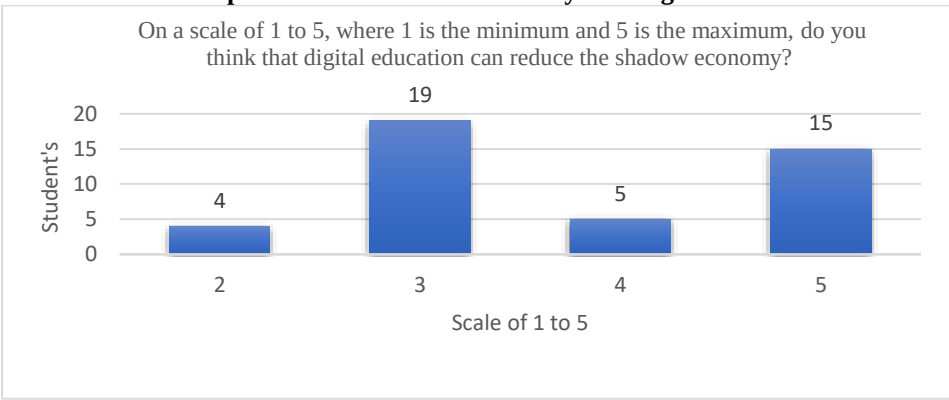

Figure no. 16 - Students' perceptions of the impact of digital education on reducing the shadow economy (scale 1–5)
Source: self-elaboration based on questionnaire responses using Excel

The graphic presents the students' responses to the question: "Do you believe that digital education could reduce the shadow economy?", evaluated on a scale from 1 to 5, where 1 signifies a minimal reduction and 5 a maximal reduction. The results indicate that most respondents believe that digital education could have a significant impact on the shadow economy. Specifically, 19 respondents (the highest number) chose a score of 3, indicating a moderate opinion regarding the impact of digital education. Another considerable number of respondents, 15 in total, chose a score of 5, believing that digital education could greatly reduce the shadow economy. 5 respondents assigned a score of 4, also indicating a strong belief in its impact. In conclusion, most students are of the opinion that digital education can significantly contribute to the reduction of the shadow economy, with only a small number of respondents considering this impact to be less significant.

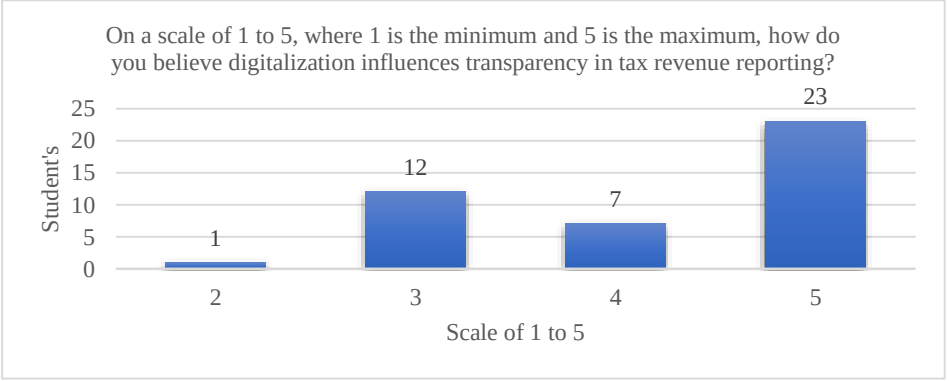

Figure no. 17 - Students' perceptions of how digitalization influences transparency in tax revenue reporting (scale 1–5)

Source: self-elaboration based on questionnaire responses using Excel

The graphic presents the students' opinions regarding the influence of digitalization on the transparency of tax revenue reporting, using a scale from 1 to 5, where 1 signifies minimal influence and 5 signifies maximal influence. Most respondents (23 individuals) believe that digitalization has a significant impact on the transparency of tax revenue reporting, assigning a score of 5. Additionally, 12 respondents chose a score of 3, suggesting they perceive a moderate impact of digitalization. Fewer respondents (7 individuals) gave a score of 4, considering the impact to be quite significant. In contrast, only 1 respondent felt that digitalization would have a small impact, selecting a score of 2. Male respondents hold a more decisive opinion, with an overwhelming majority (75%) believing that digitalization has a maximal impact. Female respondents have more varied opinions, but the largest portion still leans towards a positive impact, with 40.7% choosing the maximum level (5).

Therefore, it can be concluded that male respondents are more enthusiastic and confident in the effects of digitalization compared to female respondents, who exhibit a more balanced and nuanced perception.

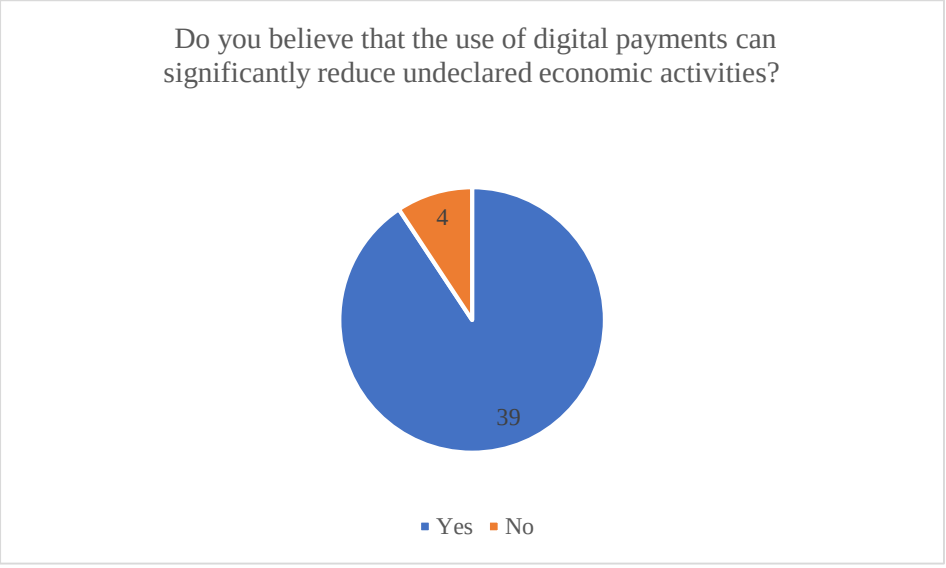

Figure no. 18 - Students' belief that digital payments can significantly reduce undeclared economic activities

Source: self-elaboration based on questionnaire responses using Excel

The graphic presents the responses to the question: "Do you believe that the use of digital payments can significantly reduce undeclared economic activities?".

The results show that 39 respondents believe that the use of digital payments can significantly reduce undeclared economic activities. In contrast, only 4 respondents are of the opinion that this would not have a significant impact. Thus, many respondents

believe that digital payments could significantly contribute to reducing the shadow economy and improving the reporting of tax revenues.
All male respondents (100%) believe in the effectiveness of digital payments. Men show absolute consensus (100%), while women also have a strong majority in agreement (85.19%). Women express a slightly lower level of confidence (85.19% vs. 100%), but this difference should be interpreted with caution given the sample sizes. Only female respondents expressed doubts (14.81%), which may indicate a more critical analysis of the factors involved.

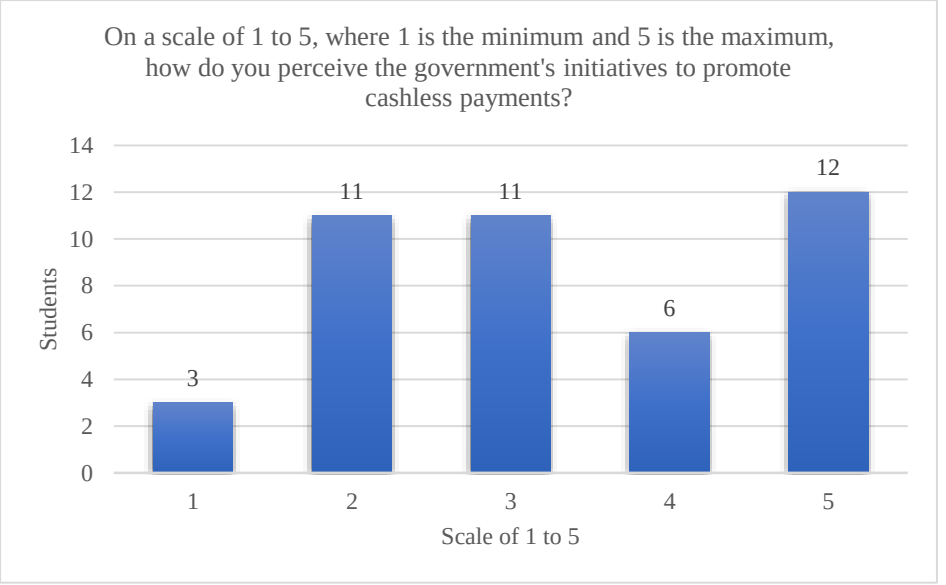

Figure no. 19 - Perceived effectiveness of government initiatives to promote cashless payments (scale 1–5)
Source: self-elaboration based on questionnaire responses using Excel

The graphic presents the students' perception of the government's initiatives to promote cashless payments, evaluated on a scale from 1 to 5, where 1 represents a negative perception and 5 represents the maximum positive perception. The results show that most respondents (12 individuals) have a very positive view of these initiatives, assigning a score of 5. Additionally, 11 respondents chose a score of 2, and another 11 respondents chose a score of 3, suggesting a moderately positive or neutral perception towards them. A smaller number of 6 respondents evaluated the government's initiatives with a score of 4, considering them relatively good. In contrast, only 3 respondents chose a score of 1, indicating a negative perception regarding the promotion of cashless payments. Overall, the largest group of students (18 out of 43) perceive the government's initiatives to promote cashless payments in a positive light, though a notable number hold neutral (11 respondents) or less positive views (14 respondents).
Women tend to be more neutral and reserved in their evaluation of government initiatives. Many of them provide an average or good score (3-4), and extreme scores are less

frequent. Men hold more polarized opinions: they either consider the initiatives very good or very poor, indicating stronger perceptions either in favor or against these policies. Overall, there isn't a vast difference between genders, but men appear to be more vocal in their criticisms, while women tend to be more moderate in their views.

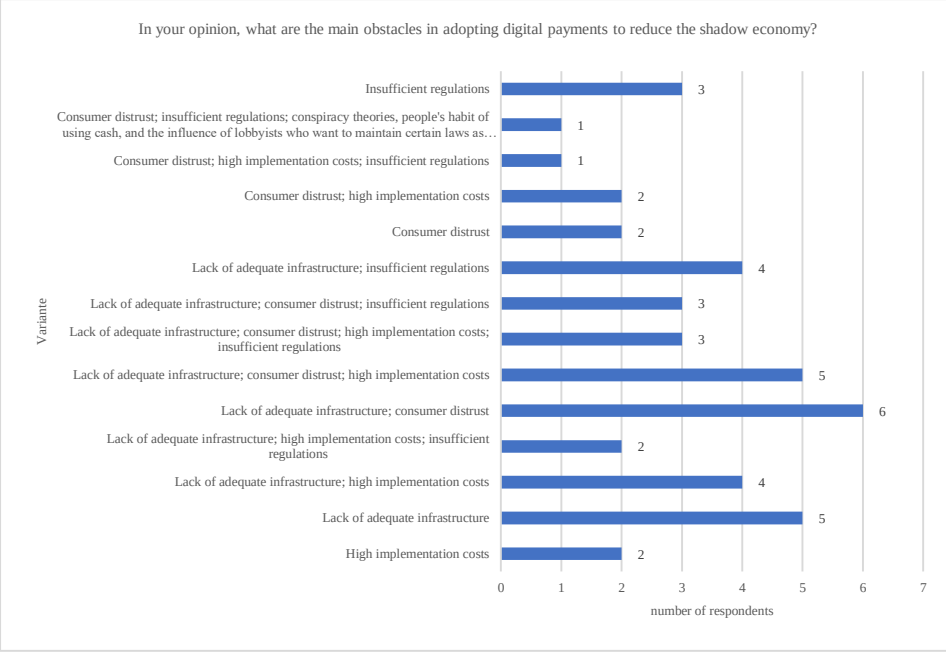

Figure no. 20 - Main obstacles identified by students in adopting digital payments to reduce the shadow economy

*Source***:** self-elaboration based on questionnaire responses using Excel

The graphic presents the respondents' opinions regarding the main obstacles in adopting digital payments to reduce the shadow economy. Each bar represents a combination of factors considered as obstacles, and the number of responses is displayed on the horizontal axis. The most frequently mentioned combination (6 responses) is "Lack of adequate infrastructure and consumer distrust," indicating that both the absence of suitable digital infrastructure and consumer reluctance are seen as major impediments. Other notable combinations include "High implementation costs" and "Lack of adequate infrastructure," each receiving 5 responses, suggesting that economic and infrastructural factors are considered significant barriers. Additionally, "Consumer distrust and insufficient regulations" were mentioned by 4 respondents, highlighting that clearer regulations and a greater level of trust could facilitate the adoption of digital payments.

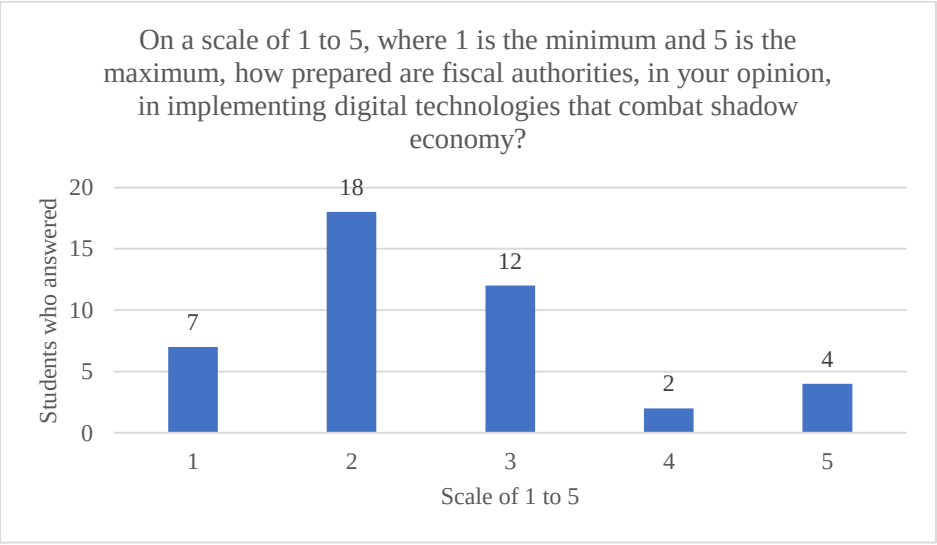

Figure no. 21 – Perceived preparedness of fiscal authorities to implement digital technologies (scale 1–5)
Source: self-elaboration based on questionnaire responses using Excel

The graphic presents the students' opinions regarding the preparedness of tax authorities to implement digital technologies in combating the shadow economy, assessed on a scale from 1 to 5, where 1 signifies minimal preparedness and 5 signifies maximal preparedness. Most respondents (18 students) believe that tax authorities are poorly prepared, assigning a score of 2. Additionally, 12 respondents consider the tax authorities to be somewhat prepared, giving a score of 3. The number of those who perceive the tax authorities as unprepared is quite low: only 7 respondents gave a score of 1, and just 2 chose a score of 4, indicating better preparedness. Only 4 students felt that the tax authorities are very well prepared, giving a score of 5. In conclusion, most students believe that tax authorities are not adequately prepared to implement digital technologies in the fight against the shadow economy, holding a generally negative perception in this regard. The data indicates that both genders perceive the tax authorities as insufficiently prepared for the implementation of digital technologies, but males tend to have a more optimistic outlook. Men show a higher level of confidence in the higher preparedness levels (score 5: 18.75% vs. 3.7% for women).

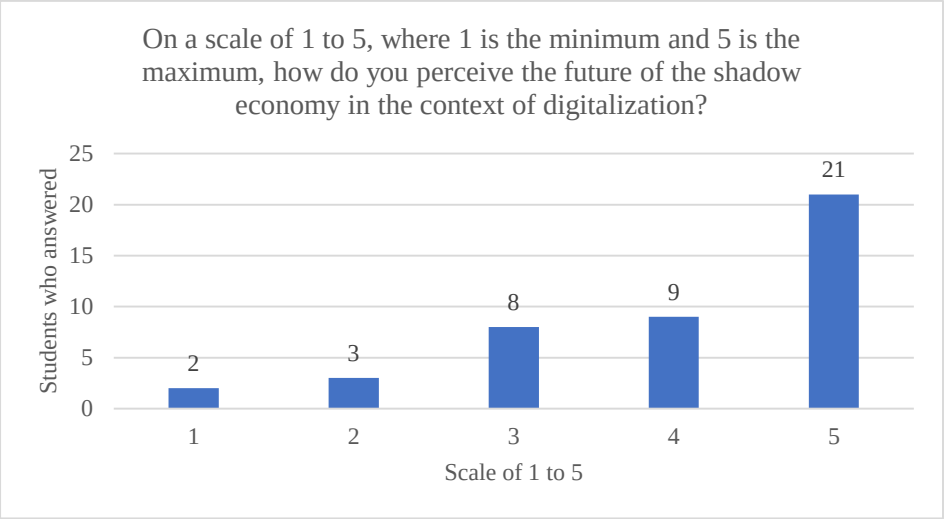

Figure no. 22 -Perceived future of the shadow economy in the context of digitalization – students' responses (scale 1–5)

*Source***:** self-elaboration based on questionnaire responses using Excel

The graphic illustrates the students' perception of the future of the shadow economy within the context of digitalization, assessed on a scale of 1 to 5, where 1 signifies a very pessimistic outlook and 5 signifies a very optimistic one. The results indicate that most respondents (21 students) believe digitalization will significantly reduce the shadow economy, assigning it a score of 5. Another notable group of 8 respondents chose a score of 3, suggesting a moderate and neutral perception regarding the impact of digitalization on the shadow economy. Additionally, 9 students awarded a score of 4, indicating a rather optimistic view, though not as strong. Fewer respondents (2 individuals) evaluated the future of the shadow economy with a score of 1, believing that digitalization will have a limited impact on this phenomenon. Both genders perceive digitalization as an effective solution, but men hold a stronger conviction (75% scoring 5 versus 33.33% of women), while 3 respondents gave a score of 2, signaling a slightly pessimistic perspective. Women exhibit a more balanced distribution of opinions (62.96% scoring 4–5), but with more expressing uncertainty (22.22% scoring 3). Overall, it appears that most students are optimistic about the impact of digitalization on reducing the shadow economy, holding a favorable view of its future. It's important to note that one of the major challenges of the last decade has been the economic activities conducted in cyberspace.

Conclusions

This study provides a detailed examination of how Master's students in Taxation perceive the shadow economy and the impact of digitalization on its reduction. The sample consisted of 43 respondents, of whom 63% were female and 37% male, with ages ranging from 22 to 57 years. The majority of students (67.4%) had studied taxation for one year, and the average reported income was 3,679.33 lei, indicating a predominantly young and

early-career demographic. Regarding familiarity with the shadow economy, 75% of respondents declared themselves at least partially familiar with the concept, while only 7% considered themselves very familiar. Tax evasion was identified as the main driver of the shadow economy, with 77% of students rating its impact at the highest level (scores 4 or 5 on a 5-point scale). When asked about the most effective method of combating the shadow economy, 35% indicated formal education in schools and universities, followed by public awareness campaigns (18%). The perception of the effectiveness of current fiscal policies is predominantly negative: 54% of respondents believe that current policies are ineffective in combating the shadow economy, while only 30% consider them effective. Most students (60%) perceive the shadow economy as having a significant or very large impact on the national economy. In terms of morality, 67% of students do not find participation in the shadow economy morally acceptable, but 33% believe it can be justified in exceptional circumstances, such as economic hardship. When asked if they would report someone involved in the shadow economy, 56% answered affirmatively, while 40% would not, and 4% were undecided. Men are more inclined to report (62.5%) compared to women (51.85%). Digitalization is widely seen as a solution: 90% of respondents believe that digital payments can significantly reduce undeclared economic activities, and 70% support the elimination of cash payments as an effective measure. Most students (90%) consider that digital education could have a moderate to significant impact on reducing the shadow economy. However, 58.1% of respondents believe that tax authorities are not sufficiently prepared to implement digital technologies, with only 14% considering them well prepared. The main obstacles to adopting digital payments identified by students are the lack of adequate infrastructure and consumer distrust (14%), followed by high implementation costs (12%) and insufficient regulations (9%).

In summary, the findings highlight that both tax education and digitalization are perceived as essential tools in combating the shadow economy. While future tax professionals demonstrate a solid understanding of the challenges and opportunities, their responses also reveal ethical dilemmas and skepticism regarding institutional readiness. These results underline the need for targeted educational programs, investments in digital infrastructure, and coherent public policies that encourage transparency and compliance. Future research could further explore the effectiveness of specific digital tools and educational interventions in shaping ethical behaviour and reducing informal economic activities among future professionals. The results of this study also highlight the essential role of financial education in shaping responsible attitudes and behaviours among future tax professionals. By identifying formal education as the most effective tool for combating the shadow economy, the findings support the need to strengthen and expand financial literacy programs within academic curricula. Prior research confirms that education not only improves decision-making skills and financial well-being, but also significantly contributes to reducing the shadow economy by fostering compliance and ethical standards (Ștefoni & Draghia, 2020).

Contribution to Public Policy Development

The overwhelming majority of future tax professionals surveyed (90%) believe that digital payments can significantly reduce undeclared economic activities, while 70% support the elimination of cash transactions as a key measure. These findings provide a

strong argument for policymakers to accelerate the adoption and expansion of digital financial solutions at the national level. Furthermore, 54% of respondents consider current fiscal policies ineffective in combating the shadow economy, and 35% identify formal education in schools and universities as the most effective tool for raising awareness and promoting tax compliance. This highlights the urgent need for public policy interventions that combine regulatory reforms with targeted educational initiatives, both in academic curricula and through public awareness campaigns. The study also identifies significant barriers to digitalization, such as inadequate infrastructure and consumer distrust (14%), as well as high implementation costs (12%) and insufficient regulations (9%). Addressing these obstacles requires coordinated government action, investment in digital infrastructure, and the creation of a trustworthy regulatory environment. The insights gained can guide policymakers in prioritizing digital transformation, strengthening fiscal education, and fostering a culture of transparency and compliance, ultimately contributing to the formalization and modernization of the Romanian economy. Based on these findings, it is recommended that policymakers prioritize the acceleration of digital payment adoption and the gradual reduction of cash transactions through targeted incentives, regulatory support, and public awareness campaigns. At the same time, public policy should invest in strengthening digital infrastructure, address consumer trust issues, and integrate comprehensive fiscal education programs at all educational levels. A coordinated, multi-sectoral approach-combining technological innovation, regulatory reform, and education-will be essential for effectively reducing the shadow economy and fostering a more transparent, modern, and compliant economic environment.

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