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# Determinant Factors in Contracting Health Insurance on the Romanian Market

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**Abstract:** Private health insurance represents a risk management method meant to reduce the financial burden related to medical issues. Covid-19 pandemic brought about an increase demand for health insurance products as concerns for the unexpected effects of unforeseen medical situation escalated and were also exaggerated by social media. The fundamental changes in the population mentality towards health (due to significant lockdowns and quarantines) caused an increase in the proportion of the personal budget destined for health protection and a development of the insurance market products, despite the contraction of the national economies. Based on a Romanian study covering the financial behavior of natural persons, the article is analyzing the conduct of persons when confronted with the negative psychological and physical effects of pandemic crisis. The authors intentions were to validate the correlations between the insurance policy and elements such as sources of information, client relationships, financial behavior using correlation and regression methods. Besides, the paper is determined to reveal whether the benefits of digitalization caused an improvement in the approach of natural persons to look after their medical situation's protection.

**Keywords:** Insurance**;** financial burden; health expenditure; resilience; awareness

## 1. Introduction

The COVID 19 pandemic has had a significant impact over the world economy and consequently on general welfare. As expected, the effects were of different intensity, strangely affecting vulnerable social categories from the point of view of the work accommodation and living conditions (Schwartz et al. 2022).

Romania has a state-owned mandatory insurance health system, similar with the ones existing in most European countries. In exchange for a monthly contribution of 10%, retained by the employer from the gross salary and paid directly to the public health fund, a person has access to a predefined set of medical services – including surgeries, prescriptions, or medical investigations, limited as number per month. The public system offers coverage both for the active population and for social cases – children, students, unemployed or retired persons generating strained situations for the budget as there has been a deficit of revenues in the last decade due to decrease of the active population in Romania. The public health system is also funded by the local authorities that are responsible for hospitals management. Over the last decade, the public hospitals have significantly increased their budget - for example one of the largest hospitals reached a budget of approx. 200 million euros in 2023, three times bigger than in 2013 (Mihalache G. 2023). Unfortunately, the public revenues allocated for the health budget are insufficient to cover the feeble health state of the population and therefore additional forms of financing are required especially when a person needs complex medical services. Governments are looking forward to increasing the contribution of private health insurance to the coverage of national health expenses and for the role in increasing the system capacity or supporter of health policy objectives (Colombo F, Tapany N. 2023). Even in the developed countries with extensive health systems, individuals look for better access to medical services, allocating time and money seeking to secure better services (Bonsang E, Costa-Font J 2023).

The offer on the private insurance market is more than generous for those interested in covering their losses, no matter what the country is under scrutiny. Even in developing countries – still dominated by motor insurance policies – the private health insurance is timidly gaining option

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among the consumers of financial services, especially after SARS-CoV2 pandemic, offering support to the financing of the public system. For example, in Romania, the contribution of the private health insurance is around 1% and way below the European Union average which is around 5% (Campeanu C. 2023). As most of the state funded systems, the Romanian system suffers from chronical short funding, difficult access to basic medical services and sometimes significant delays in delivering the proper medical care. Such obstacles have opened the market for private medical services, which is still a growing sector, developing mostly in urban areas.. Health insurance products provided a solution, and the sector quickly became an important growth factor for the insurance industry.

The Romanian private health insurance sector registered a positive evolution in the level of gross written premiums and paid claims, reaching an increase of 35% in 2022 compared to the previous year, approx. 134 million euros due to pandemic and fiscal deductions offered to employers and employees (ASF 2022).

However, private medical services, even though they offer much better-quality services than the state, often come at a price hardly affordable for a regular employee. Still, in a very untypical insurance market, dominated by MTPL, which has created sever disruptions in the past (two main insurers with more than 60% market share, filled for bankruptcy over the last years) increasing the market share of private health insurance products would be beneficial and studies approaching determinants for contracting such insurances become more and more relevant. Even though the literature provides a series of papers tackling the health insurance products, no study has recently and specifically approached the sales determinants for health insurance within the framework of COVID-19 pandemic effects.

## 2. Literature review

The factors that influence the decision to purchase health insurance are multiple, determined by each person's perception of its usefulness, but also by socio-demographic conditions.

The Anderson model leads to three dynamics when it comes to acquiring a private health insurance policy: predisposing factors, enabling factors, and need. Predisposing factors can be characteristics such as race, age, and health beliefs. Socio-demographic factors like age, economic status or education tend to be decisive but there are also several influencing factors like marital status, incentives, fiscal benefits etc. The decision to buy private health insurance is determined by different factors - social (age, education, marital status), enabling (household income, medical expenses, or debt) and needs-based (health status) (Shi H et al, 2022). Other studies revealed that the employment status and type as well as public health insurance status may affect the decision to purchase private medical (Wan G et al, 2020).

*Private health insurance*

Having a basic level of information about risk management, people tend to contract a private insurance policy to get coverage for their exposures. According to different studies, there is a positive correlation between the risk acknowledged by the bearer and the level of insurance coverage searched for (Chiappori P.A. et al, 2010). Adverse selection and moral hazard models expect a positive relationship between risk and insurance; yet the most common finding in empirical studies of insurance documents is a negative correlation between the two elements (Doiron D, et al, 2008).

On the other hand, for the insurance market, asymmetric information and adverse selection may be the cause for setting up certain levels of insurance prices and insurance demand but the consumers preferences are always being incorporated in the underwriting process to ensure the welfare impact of the potential market interventions (Einav L, et al, 2010). The standard model of insurance, including health may be hard to explain if the consumers behavior is not present in the expected utility model of insurance, which supports the idea that the probability of an event is based strictly rationally on the historical data. Loss aversion, misunderstanding of probabilities, or increased access to the information on the internet must be taken into consideration as the last pandemic event showed us. As in the case of other types of insurance products, health insurance is purchased infrequently and may be difficult to assess – as consumers tend to hesitate in choosing a new product or the comparison of the prices and coverages being tough to perform due to intricacies of the highly customized insurance products. The dynamic feature of medical exposures that accelerates with age and chronic health conditions bring about a special interest of the insurance companies to prudently evaluate the probability of losses and adapt their pricing policy even though that would generate an increase in the insurance premiums and hence would generate a decrease in the demand of such product (Hendel I, Lizzeri A, 2003). The relation between risk and probability of contracting private health insurance is not always clear – not all the time the high-risk persons will ask for extensive but with substitute coverage the low-risk persons will choose not to purchase private insurance (Olivella P, Vera-Hernandez M, 2006). Even more, the consumers of private

health insurance are keener on reporting the purchase of an insurance than the people without private insurance. The younger they are, the more cognitive they are in terms of understanding and processing information about insurance options, the more visible is the determinant relation between this ability and the decision of insurance purchase (Fang, H, et al, 2008).

Distress level and the ability of evaluating the opportunity cost of a health insurance product (benefits vs costs of the insurance purchase) highly depend on the level of education, including financial education and determine the awareness of insurance utility. There are studies supporting the idea that a high level of education implies a higher level of income and thus a preference for private insurance products as consumers are interested in avoiding long queues in public hospitals and demand a certain level of privacy, such as private rooms (Buchmueller T.M., et al; Cobb-Clark D. A., et al 2016).

Private insurance may act as a mental comforter as risk aversion may determine persons to purchase a protection instrument for their peace of mind. Individuals preoccupied with healthy behaviors (less likely to smoke or more likely to exercise) are prone to purchase health coverage even though they are not the primary target of such a product as they represent a low risk for medical exposures (Cutler D.M. et al, 2008). Individuals that believe to be in control of their own life (known as internal locus of control people) are prone to access private health insurance as they are inclined to anticipate future needs and therefore pay attention to the health risk management and quality of care services (Bonsang E, Costa-Font J., 2022; Kesavayuth D., et al 2020). This is consistent also with other studies revealing the importance allocated for preventive health measures of the more active individuals (Cobb-Clark D. A., et al 2014; Schmitz H, 2001).

It is widely accepted that the pandemic has influenced the insurance industry, especially when it comes to health and life insurance products. In terms of common characteristics of the latest evolutions related to COVID-19 pandemic, there are usually two concepts that have become a constant in international debates- Health and Digital. While limited medical resources and their accessibility were largely discussed, there is no question that restrictive lockdowns have boosted digitalization and digital solutions in the financial sector. The Covid-19 pandemic ignited the necessity of the governments to have access to timely health expenses data to promptly adapt the national policies (Muller M., et al, 2023).

When it comes to insurance, it was little surprise that health insurances have gained the spotlight and started to become more relevant than before. Digitalization changed its status from strategic objective to an operational necessity of the companies to remain competitive on the market– the pandemic became a trigger to act faster than the expectations of the insurance companies (Malenkov Y., et al, 2021; Pauch D., Bera A., 2022). The use of technologies in insurance operations created higher expectations of the customers as flexible and permanent access to health insurance services was paramount in the first months of the pandemic. Adopting new digital systems strained the financial situation of the companies but brought about tremendous advantages for those able to switch in a short period to online services as the pressure to retain existing customers and attract new ones without the benefit of face-to-face interaction (World InsurTech Report 2020). The new trends in digital technologies proved to increase the insurance market undercurrents and transparency as well as accentuated the reduction in the transactions' costs (Cappiello A, 2020).

Using online documents triggered a number of amendments to national legal framework, whereas dealing with privacy issues, or archiving as the offsite procedures were impossible to implement in the aftermath of Covid-19 burst – social media sales channel, online services availability and facial recognition technology are only some of the positive "side-effects" of the pandemic (Keller B, ea al, 2019; Reinartz W, et al, 2019; Porrini D, 2023; Naghi, Laura Elly, 2023).

FinTech and Insurtech became the innovative trademark of the financial sector – initial work of adopting digital technologies in the area of insurance intermediaries and regulation was developed in the claim settlement activities- enabling customers to have better experience with their insurance contract (Volosovych S, et al, 2021; Daqar M, et al 2020). Several advantages were observed both by the customers and employees of the insurance companies after implementation of Insurtech solutions – which brought up new opportunities on medium term, despite the tremendous costs involved: product innovation in the product design; reduction of information asymmetries and finer segmentation of the clients in the assessment stage; digitally stored contracts and increased involvement of the customer in the sales and distribution as well as fraud reduction and decrease of the processing time in the claims settlement department.

*Digitalization*

Digitalization refers to innovation, access to information in real time, it is about efficiency, cost reduction, is about improving an existing business process while reducing costs and taking advantage of the benefits of dealing with big data (Eling M., Lehmann M., 2018; Qi Y., et al 2022). Digital transformation implications are widely applied in the operational processes of insurance companies from the moment of potential customer contact until the moment of electronic payment of claims settled automatically by the companies' employees (Pauch D., Bera A., 2022; Eckert C.,

Osterrieder K., 2020). The process of digital transformation is an ongoing one, boosted by the immediate needs required by the restrictions during the pandemic. It has not started with the pandemic nor was it finished as the restrictions ended. Theoretically, enabling the process of acquiring a health insurance policy would trigger a growth in sales, a wider coverage along with expanding the reach to different social categories. However, making products like health insurance more accessible, putting them at "click distance" it is a problematic challenge that involves changes at multiple levels, digitalization being just one of them (PwC 2019, Delloite, 2020).

A rather common effect of the pandemic is a raise of people awareness when it comes to potential health risk and the limitation of otherwise performant state-owned medical systems with wide coverage (especially in Europe). In some countries risk perception is relatively low, caused by several aspects like culture, history, etc. However, the diminishing sensitivity of individuals exposed to continuous high level of risks is one of the factors diminishing the interest in further protection as a supplementary form of risk will not impact them (Kahneman D., Tversky A). Second, the phenomenon of narrow bracketing, i.e., the tendency of individuals to consider risky choices rather separately than jointly, might similarly apply to decisions under background risk and might make subjects on more unrelated risk when deciding on investments (Read D., et al, 1999). Given that the impact of background risk is a priori unclear it is important to test it with data on actual behavior (Strobl R. 2022).

When an individual already has a form of medical insurance offered by the public system with mandatory contribution, acquiring a private health insurance policy seems to be influenced by a series of factors. Tax deductions were introduced in Romania but the measure's impact on the industry is yet to be determined whereas some governments have cancelled the deductions with little impact (Rodríguez M., Stoyanova A, 2008).

Also, a factual situation is to be considered when a mandatory state health care system is in place. Having private health insurance as a matter of choice considered an adverse selection or a substitute framework. This means that the private insurer must bear the entire treatment cost. The substitutes framework is available in several European countries like Finland, Italy, Spain, but also in countries like Mexico, New Zealand and, to some extent, in Romania (Olivell P, Vera-Hernandez M 2022). In the case of substitutes framework, high-risk individuals are the ones to purchase supplementary health insurance if adverse selection is the basis of insurance, reflecting a positive correlation with the risk probability. On the other hand, in the case of advantageous selection, low-risk individuals are the first to contract private insurance. In other words, under the substitutes framework the sign of the correlation between the probability of purchasing private insurance and risk is positive in the presence of adverse selection and negative in its absence (Gottlieb D., Mitchell O.S. 2022) Even though not very common, marital status has also been found to influence the decision of contracting a private health insurance as a positive correlation was identified between the marital status and the intention to reach out and contract a health insurance to protect all the members of the family (Akokuwebe M. E. M., Erhabor E. S. 2022).

*Consumer behavior*

Using data, marketers can gain an understanding of how consumers choose products or services, the thought and/or emotional process behind those decisions, and what motivates them to choose one product instead of another. Consumers of varying age groups are often drawn toward different types of products. Culture and Background play a role in consumer behavior – the countries with low financial literacy are less inclined to make purchases that improve their welfare or of a group, such as their family. All consumers have buying habits that are linked to their interests, and this influences the final decision of consumption. Education represents also an important factor which influences the purchase of insurance products – as the discrepancy increases between the variety of insurance offer and the level of studies of the Romanian majority (Ioncică M, et al, 2012). Financial literacy programs implemented at international level brought about changes in the consumer behavior – as more and more individuals are exposed to proper explanation of financial concepts, the number of complaints on the insurance market decreases and the client relationship management is improved. If consumer behavior and the understanding of the insurance represent triggers for the decision to buy, there is no direct relation between these two factors and the intention to buy (Dragos S, et al, 2020).

Social factors, such as buyers' income level, where they live, and their family dynamic, may play a role in the types of products and services they spend their money on. Interactions Within Community-Driven Environment is one of the social factors influencing the purchase of goods and services, including financial services. Consumers' desire to fit in with their friends, peers, and coworkers often plays a role in their purchasing decisions. The income level of consumers correlates closely with their buying patterns. Whereas low-income consumers may be concerned with buying based on needs versus wants, high-income individuals often have more expendable income and, thus, may be inclined to buy products based on wants instead of needs. Studies conducted on

different types of services revealed that individuals with high contact services perceived confidence and social benefits as the most important advantages in assessing the level of service and personal involvement (Srihadi T.F., Setiawan D, 2015).

Experts agree that there are four main types of consumer behavior: complex-buying behavior, dissonance-reducing buying behavior, habitual buying behavior, and variety-seeking buying behavior. Studying these behaviors can help marketers understand the types of things that may, and may not, influence a purchasing decision. Understanding the factors that can influence a consumer to say yes instead of no can help in designing targeted marketing strategies. Cultivating long-term relationships with customers, especially in complex insurance contract represent a must condition for succeeding in retaining customers (Berry, L.L 2022).

Complex buying behavior occurs when an individual buys an expensive and infrequently purchased product. Consumers are often highly involved with this type of purchase, and they take time to research the significant differences between various brands. Complex purchases often involve a deep sense of buyer commitment based on their associated costs. For example, consumers may have such behavior in case of contracting a complex health insurance including various coverages (interventions, disability, accidents clause etc.). There is a correlation between risk aversion and the decision to purchase insurance based on the willingness to take upon financial risks (Eling M, et al 2021). Dissonance-reducing buying behavior occurs when a consumer is highly involved in the purchase of an item, but they have a hard time pinpointing the difference between various brands. The "dissonance" occurs when a consumer is worried, they will make the wrong choice and will regret their decision later. Habitual buying behavior happens when consumers purchase something on a regular basis, but they are not emotionally attached to a brand. This type of behavior may apply for compulsory type of insurance. Variety Seeking Buying Behavior happens when individuals decide to buy a different product in the same product line, such as from a new insurer, not because they were dissatisfied with their initial purchase, but because they want to try something new.

A March 2019 study by the Journal of Retailing and Consumer Services notes that payment methods can lead to upticks in consumer spending (Costa A, et al 2019). The speed and ease of how payments are made can also play a role - consumers are more likely to buy when a business accepts payment via an internet account. In contrast, consumers who prefer to pay using cash are more likely to restrict their spending because, from a psychological perspective, every purchase is interlinked with an actual parting with physical money.

Consumer behavior can be highly influenced by the marketing of the insurance companies, if they take care to include in their activity efforts to explain the complexity of insurance vocabulary in simpler words so that the level of understanding the specific concepts is improved and therefore a better awareness level of the consumers to financial exposures is reached.

The purpose of this research is to analyze the factors influencing the decision to take out private health insurance in Romania, assessing the impact of consumer behavior, information sources, perceived benefits and digital solutions on affordability and consumer preferences based on a national survey on consumer perceptions of financial markets that was conducted in 2022 at the national level. The study aims to inform the design of insurance products and optimize marketing and actuarial strategies considering changes brought about by the COVID 19 pandemic and financial market developments.

The paper analyzes the behavior of individuals confronted with the psychological and physical effects of the pandemic crisis, with a focus on the decision for private health insurance. Based on a Romanian study, the authors investigate the correlations between the decision to take out a health insurance policy and factors such as sources of information, customer relations and financial behavior, using statistical correlation and regression methods. The paper foregrounds fundamental changes in health attitudes in the context of the COVID-19 pandemic, highlighting how digitization and increased reliance on official information sources have influenced private health insurance consumption behavior. The study also explores the impact of novel factors such as the amplified effects of social networks and the increased allocation of financial resources to health protection.

## 3. Materials and Methods

Our research was based on a national survey concerning the consumers' perception towards financial markets, carried out in 2022 on national level, based on a sociologic inquiry (Siminică M, et al, 2022). The research comprised a representative sample of 1303 respondents, 626(48%) males and 677(52%) females, having an error margin of 2,71% with a level of trust of 95%. The sample is determined as shown in figure 1, by considering Romania' population as slightly over 18 milions.

$$n = N * \frac{\frac{Z^2 * p * (1-p)}{e^2}}{\left[N - 1 + \frac{Z^2 * p * (1-p)}{e^2}\right]}$$

N = population
Z = Z score according to the level of trust
p = standard deviation
e = error admitted
n = sample

**Figure 1.** Sample Determination

Out of 1303 people invited to answer aged above 18 years, just 379 persons were detailed in their replies concerning health insurance products. The structure of the target group is detailed in the following paragraphs.

To verify the reliability of the data collected through the questionnaire, we calculated the Cronbach's Alpha coefficient, resulting in the values in the following table:

**Table 1.** Cronbach's Alpha Coefficient

| **Reliability Statistics** | |
|---|---|
| Cronbach's Alpha | N of Items |
| .556 | 11 |

The value obtained is low, but it is higher than the minimum threshold of 0.500, confirming the reliability of the data.

The control variables used for this paper are some of the general social variables: age, income, education.

We undertook to validate the following research hypotheses:

- H1: Consumers with adequate consumption behavior tend to contract facultative health insurance;
- H2: The information source directly influences the decision of contracting insurance products;
- H3: Consumers inclining to savings favor to contract facultative insurance products
- H4: The decision of contracting a certain insurance product is taking into consideration the benefits of the insurance products;
- H5: The agile process of contracting an insurance determines the decision of contracting.

In order to better analyze the correlations mentioned in the hypotheses, we will define the following variables:

**Table 2**. Analyzed variables.

| **Name variables** | **Symbol** |
|---|---|
| ***Dependent variables*** | |
| Use of health insurance | UT |
| Use of health insurance in the last 3 years | UT_3Y |
| ***Factorial variables of a behavioral nature*** | |
| The consumption behavior index | ICC |
| The information sources index | ISI |
| The financial behavior index | ICF |
| The motive for choosing a particular insurer | MAB |
| The method of purchasing the insurance | MOD_A |
| ***Factorial variables of a socio-demographic nature (control variables)*** | |
| Age | Age |
| Education | Education |
| Income | Income |

Promoting an adequate **consumer behavior** in financial services based on an efficient management of financial resources represents one of the main objectives of financial literacy projects. An equilibrated budget will ensure that the ordinary expenses are covered on a rational basis by the revenues obtained by the person. Unfortunately, the decision of consumption is not a rational one, being caused as mentioned in the previous section by different factors that generate an emotional response to an existing situation and subsequently an irrational expense.

For the analysis of the consumption behavior, we developed a **consumption index**, and a qualitative index based on a set of 3 questions addressed to the participants of the target group:

- For a future purchase of facultative insurance product, I am looking for at least 3 different offers (Yes/No)
- Usually, I read the information sent by the financial entities (insurance companies) that I am working with (Yes/No)
- I am aware of the deductions offered by the state for the health insurance products and private pensions (Yes/No)

We assign 1 point for positive replies and 0 points for negative replies or lack of replies. We cumulated the points into an aggregated consumption behavior index with values between 0 si 3.

The consumption behavior index (ICC) was computed for each participant of the target group using the method of aggregating individual results, as follows:

$$\text{ICC} = \sum_{i=1}^{3} Pi$$

where: Pi – represents the scores obtained for each of the 3 questions used to assess consumer behavior.

The higher the consumption behavior index, the more adequate the consumption behavior of the consumers.

In order to evaluate the **financial behavior** of our analyzed target group, we inquired the participants about the following options:

- Are you an organized person in managing your income (Yes/No)?
- Are you trying to save on a regular basis, when possible (Yes/No)?
- Is it important for you to have short-term financial plan (Yes/No)?
- Do you save money only when you wish for a special something (Yes/No)?
- Are you an impulsive person, buying even when you cannot afford the expenditure (Yes/No).

Based on this set of questions we developed a **financial behavior index**. As expected, an adequate financial behavior implies affirmative replies to the first 3 questions respectively negative replies to the following 2 questions. Therefore, for the first 3 questions 1 point was allocated for affirmative reply and 0 points for negative reply whereas in the case of the last 2 questions, 1 point was allocated for negative reply and 0 points was allocated for affirmative reply.

The financial behavior index (ICF) was computed for each participant of the target group using the method of aggregating individual results, as follows:

$$ICF = \sum_{i=1}^{5} Pi$$

where: Pi – represents the scores obtained for each of the 5 questions used to assess financial behavior.

The higher the financial behavior index, the more adequate the financial behavior of the consumers.

In the insurance industry, as in the case of other financial services area, the source of information used to take the decision of purchasing a product is of maximum importance. Lack of solid, trustful sources of information may generate biased decisions generating future financial losses as well as loss of trust of the consumer in the industry.

In order to assess the source of information used for health insurance purchase, we developed a **source of information index**, by addressing a question to the survey participants "where do you usually take your information before purchasing a financial product" with the following alternatives structured taking into consideration the importance/trustfulness of the source.

**Table 3.** Types of sources of information

| **Source of information** | **Points allocated** |
|---|---|
| The advice offered by an authorized professional consultant | 8 |
| Web pages of financial institutions | 7 |
| Headquarters of the financial institution | 6 |
| Specialty press | 5 |
| Social media pages (Facebook, Twitter a.s.o.) of the financial institution | 4 |
| Forums | 3 |
| Relatives' advice, family advice | 2 |
| Facebook groups that I am part of | 1 |
| I do not buy insurance products/Do not know/ Do not answer | 0 |

By aggregating the individual replies of the participants, we computed a source of information index that evaluates the level of trust in a certain type of source for information. **The higher the index, the more trust in reliable, professional types of sources.**

## 3. Results

### *3.1. Analysis of determinant factors for the purchase of health insurance products*

Following the centralization of the questionnaire completed by 1 303 participants, it resulted that 379 people, representing 29.1% of the sample, had private health insurance, out of which, 205 people (15.7%) had such of insurance product for the last 3 years. The percentage of people who benefited from facultative health insurance during the COVID 19 pandemic was relatively low in Romania, being influenced by a multitude of factors, including the individual behavior and socio-demographic differences.

Based on the study, behavioral factors were analyzed using the following variables: consumption behavior index; index of information sources; financial behavior index; motive for choosing the insurer and method of purchasing the insurance.

Descriptive statistics indicators for these variables are presented in the following table:

**Table 4.** Descriptive statistics indicators for factorial variables

| ***Factorial variables*** | Minimum | Maximum | Mean | Standard Deviation |
|---|---|---|---|---|
| The consumption behavior index (ICC) | 0 | 3 | 1,65 | 0,952 |
| The information sources index (ISI) | 0 | 8 | 3,85 | 3,270 |
| The financial behavior index (ICF) | 0 | 5 | 3,92 | 1,049 |
| The motive for choosing a particular insurer (MAB) | 0 | 5 | 2,90 | 1,435 |
| The method of purchasing the insurance (MOD_A) | 1 | 2 | 1,12 | 0,456 |

The consumption behavior index was calculated by summing up the scores obtained from answering three questions. Each reply received individual values between 0 and 3 points. Following the centralization of the data from the applied questionnaires, we found that 71.2% of the individuals request at least three offers when purchasing private insurance, 62.1% read the information received from the insurance companies they collaborate with and only 26.7% are aware of fiscal tax deductions when purchasing a health insurance policy. The average value of the consumption behavior index was 1.65 points, higher than the median value of the scoring interval. Only 19.2% of the respondents had the maximum score (3 points), 41.1% obtained 2 points, while 25% registered 1 point and 14.7% 0 points.

According to our methodology, the information sources index registered individual values between 0 and 8 points, depending on the information source that each respondent preferred. Thus, only 12.97% of the respondents declared that they seek the advice of an authorized financial consulting company, obtaining the maximum score (8 points), another 22.1% obtain information from the websites of financial institutions (7 points), respectively 13.28% go to the institutions' headquarters (6 points). The average score of the information sources was 3.85 points, lower than the median value of the scoring range, determined by the large number of respondents who declared that they do not purchase financial products / do not know / do not answer (35.22% of the total, who received 0 points).

The financial behavior index measures people's tendency towards saving – investing. According to our methodology, individual values of financial behavior index range from 0 to 5 points based on 5 questions. The average level of the financial behavior index was 3.92 points - 88.9% of the respondents consider themselves organized people when it comes to money management; 89.3% stated that they try to save regularly; for 72.9% it is important to have a short-term financial plan while 51.9% do not agree to save only when they want something special, and 83.6% do not consider themselves impulsive people (they purchase products even when they cannot afford them).

The motive for choosing a particular insurer is important in making the decision to purchase a private insurance policy. Individuals who correctly understand the role of health insurance as a protection method against risks will be much more willing to purchase such a product. The evaluation of the motives for choosing a particular insurer was carried out by awarding scores from 0 to 5 depending on the stated reason. Depending on the importance the respondents who had ever purchased an insurance product allocated to different reasons, only 14.4% of the respondents considered the level of coverage (5 points) as primary reason, 26.4% took into consideration the price (4 points), 16.3% they considered the company's reputation (3 points), 25.1% were guided by their previous experience with the company (2 points), 11.4% were guided by a friend's recommendation (1 point) and 6.4% did not answer the question (0 points). Based on the individual values collected, the average score for this index was 2.90 points, higher than the median value of the scoring range.

The method of purchasing the insurance (either going to the headquarters of an insurance company / broker, respectively online, on the internet page of the insurer/broker or using an online store), represents another determinant – it can improve the sales by choosing the appropriate selling channel. 80.4% of respondents preferred to go to the insurance company/broker's office and only 14.8% bought their insurance policy online. Narrowing down the sample to individuals who purchased a health insurance policy, we found out that 21.6% of the sample purchased this insurance product online which reflects a greater interest in this method of purchase.

Socio - demographic factors also have a significant influence on the decision to purchase health insurance. Among them, for the study we selected three factors: age, education, and income level, and reached the conclusion (conforming other studies) that young people, with higher education or higher incomes have a higher degree of access to private health insurance than the average.

Under these conditions, we used these 3 variables as control variables for the statistical analysis of the factors that determine the decision to purchase health insurance. To analyze the dependence between the identified influencing factors and the decision to purchase health insurance, we used the correlation method and multiple linear regression.

*3.2. Analysis of the correlation between the purchase of health insurance and behavioral factors*

We computed Pearson correlation coefficient using the analyzed variables and obtained the following results - Table 5.

**Table 5.** Correlation matrix with behavioral factors.

| | | UT | UT_3 Y | ICC | ISI | ICF | MAB | MOD_A |
|---|---|---|---|---|---|---|---|---|
| UT | Pearson Correlation | 1 | . [A] | ,160 ** | ,154 ** | -,017 | ,028 | .085 * |
| | Sig. (2-tailed) | | ,000 | ,000 | ,000 | ,573 | ,422 | ,016 |
| | N | 1142 | 379 | 1142 | 1142 | 1142 | 817 | 817 |
| UT_3 Y | Pearson Correlation | . [A] | 1 | ,086 | ,154 ** | ,047 | .178 ** | ,124 * |
| | Sig. (2-tailed) | ,000 | | ,093 | .003 | ,362 | ,000 | ,016 |
| | N | 379 | 379 | 379 | 379 | 379 | 379 | 379 |
| ICC | Pearson Correlation | ,160 ** | ,086 | 1 | ,222 ** | ,167 ** | ,102 ** | ,156 ** |
| | Sig. (2-tailed) | ,000 | ,093 | | ,000 | ,000 | .003 | ,000 |
| | N | 1142 | 379 | 1303 | 1303 | 1303 | 877 | 877 |
| ISI | Pearson Correlation | ,154 ** | ,154 ** | ,222 ** | 1 | .079 ** | ,152 ** | ,134 ** |
| | Sig. (2-tailed) | ,000 | .003 | ,000 | | .004 | ,000 | ,000 |
| | N | 1142 | 379 | 1303 | 1303 | 1303 | 877 | 877 |
| ICF | Pearson Correlation | -,017 | ,047 | ,167 ** | .079 ** | 1 | .093 ** | ,058 |
| | Sig. (2-tailed) | ,573 | ,362 | ,000 | .004 | | ,006 | .085 |
| | N | 1142 | 379 | 1303 | 1303 | 1303 | 877 | 877 |
| MAB | Pearson Correlation | ,028 | .178 ** | ,102 ** | ,152 ** | .093 ** | 1 | .175 ** |
| | Sig. (2-tailed) | ,422 | ,000 | .003 | ,000 | ,006 | | ,000 |
| | N | 817 | 379 | 877 | 877 | 877 | 877 | 877 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Source: Processing with the help of SPSS

The obtained results show a direct relationship, statistically significant, but of low intensity, between the use of health insurance and the consumption behavior index (R = 0.160, Sig = 0), the information sources index (R = 0.154, Sig = 0), respectively the method of insurance purchase (R = 0.085, Sig = 0.016). This means that people who have an appropriate consumption behavior, requesting several offers when concluding an insurance, getting information from sources with a high degree of credibility and with a greater openness to purchasing insurance in the online system, have a greater willingness to purchase health insurance. Surprisingly, the use of health insurance does not correlate with the index of financial behavior, respectively with the motive for choosing the insurer.

In order to evaluate the change in consumer behavior during the COVID-19 pandemic, we analyzed the link between the use of health insurance in the last 3 years and behavioral factors. We found out that there is a direct, statistically significant, but of low intensity, relationship of insurance use in the last three years with the index of information sources (R = 0.154, Sig = 0.003), respectively with the method of purchasing insurance (R = 0.124, Sig = 0.016). Compared to the pre-pandemic period, over the last 3 years a positive, statistically significant, low-intensity link was identified with the motive for choosing the insurer (R = 0.178, Sig = 0), which means that during the pandemic people were much more careful to the risks covered when they decided to purchase

health insurance. The consumer behavior index and the financial behavior index do not correlate with health insurance use in the past 3 years.

*3.3. Analysis of the correlation between the purchase of health insurance and socio-demographic factors*

The results of Pearson correlation coefficient computed based on variables involved in the analysis may be seen in the following table.

**Table 6**. Correlation matrix with socio -demographic factors.

| | | UT | UT_3 Y | Age | Education | Income |
|---|---|---|---|---|---|---|
| UT | Pearson Correlation | 1 | . A | -,116 ** | ,221 ** | ,157 ** |
| | Sig. (2-tailed) | | ,000 | ,000 | ,000 | ,000 |
| | N | 1142 | 379 | 1142 | 1142 | 1142 |
| UT_3 Y | Pearson Correlation | . A | 1 | -.165 ** | ,133 ** | ,138 ** |
| | Sig. (2-tailed) | ,000 | | ,001 | ,009 | .007 |
| | N | 379 | 379 | 379 | 379 | 379 |
| Age | Pearson Correlation | -,116 ** | -.165 ** | 1 | -.086 ** | -.253 ** |
| | Sig. (2-tailed) | ,000 | ,001 | | ,002 | ,000 |
| | N | 1142 | 379 | 1303 | 1303 | 1303 |
| Education | Pearson Correlation | ,221 ** | ,133 ** | -.086 ** | 1 | .294 ** |
| | Sig. (2-tailed) | ,000 | ,009 | ,002 | | ,000 |
| | N | 1142 | 379 | 1303 | 1303 | 1303 |
| Income | Pearson Correlation | ,157 ** | ,138 ** | -.253 ** | .294 ** | 1 |
| | Sig. (2-tailed) | ,000 | .007 | ,000 | ,000 | |
| | N | 1142 | 379 | 1303 | 1303 | 1303 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Source: Processing with the help of SPSS

The use of health insurance throughout life, but also during the pandemic, correlates with each of the socio-demographic variables included in the analysis. Thus, an inverse (negative) relationship, statistically significant, was identified between the use of health insurance and the age of the respondents. However, the intensity of this link is low (R = -0.116, Sig = 0 for UT, respectively R = -0.165, Sig = 0.001 for UT_3Y) which means that young people are more inclined to purchase private health insurance.

The use of health insurance correlates directly (positively) with the level of education (R = 0.221, Sig = 0 for UT, respectively R = 0.133 and Sig = 0.009 for UT_3Y) and with the level of income obtained by respondents (R = 0.157, Sig = 0 for UT, respectively R = 0.138 and Sig = 0.007 for UT_3Y). This means that an increase in the level of education (university studies), respectively an increase in the population's income, causes an increase in the willingness to purchase to health insurance. The identified correlations are statistically significant because the value of the Sig indicator is less than 0.01, but the strength of the link is reduced.

Socio-demographic variables are used as control variables. By identifying the link between them and the use of health insurance we validate the proposed analysis model.

*3.4. The multiple linear regression model*

The multiple linear regression model has the role of estimating the intensity of the influence of each factorial variable on the degree of use of health insurance. Based on the results of the pre-

viously performed correlation analysis, a multiple linear regression model is proposed for the analysis of the use of health insurance (UT), which includes 3 behavioral variables and 3 socio -demographic variables. The general form of the regression model is:

$$UT = \beta_0 + \beta_1 \text{ x ICC} + \beta_2 \text{ x ISI} + \beta_3 \text{ x MOD\_A} + \beta_4 \text{ x Age} + \beta_5 \text{ x Education} + \beta_6 \text{ x Income}$$

To validate this model and determine its parameters, we used the SPSS software program, obtaining the following results:

**Table 7.** Model Summary 1

| R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
|---|---|---|---|---|---|---|---|---|---|
| | | | | R Square Change | F Change | df1 | df2 | Sig. F Change | |
| .234 [a] | .055 | .048 | .48696 | .055 | 7,809 | 6 | 810 | .000 | 1,941 |

a. Predictors: (Constant), Income , ISI, ICC, MOD_A, Age, Education

b. Dependent Variable: UT

Source: Processing with the help of SPSS

**Table 8**. ANOVA – model 1 [a]

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 11,110 | 6 | 1,852 | 7,809 | .000 [b] |
| | Residual | 192,074 | 810 | .237 | | |
| | Total | 203,185 | 816 | | | |

a. Dependent Variable: UT

b. Dependent Variable: UT

Source: Processing with the help of SPSS

The regression model obtained has a coefficient of determination R 2 =0.055, which means that the factorial variables included in the model explain 5.50% of the decision to purchase health insurance. These data validate, from a statistical point of view, the results of the regression analysis, based on the p-value = 0.0000 (column Sig). A p-value lower than 0.05 gives increased validity to the results obtained from statistical data processing.
Model parameters are presented in the following table.

**Table 9**. Coefficients – model 1

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Zero-order | Partial | Parthian | Tolerance | VIV |
| 1 | (Constant) | .399 | .122 | | 3,281 | .001 | | | | | |
| | ICC | .035 | .021 | .059 | 1,693 | .091 | .099 | .059 | .058 | .952 | 1,050 |
| | ISI | .008 | .006 | .053 | 1,487 | .137 | .109 | .052 | .051 | .913 | 1,095 |
| | MOD_A | .026 | .039 | .024 | .661 | .509 | .085 | .023 | .023 | .920 | 1,088 |
| | Age | -.072 | .018 | -.142 | -3,934 | .000 | -.186 | -.137 | -.134 | .895 | 1,117 |
| | Education | .049 | .030 | .061 | 1,676 | .094 | .115 | .059 | .057 | .878 | 1,139 |
| | Income | .026 | .016 | .060 | 1,662 | .097 | .126 | .058 | .057 | .885 | 1,130 |

a. Dependent Variable: UT

Source: Processing with the help of SPSS

For the statistical validation of the model, it is necessary to check the autocorrelation of the errors and the hypothesis of multicollinearity. The validation of the autocorrelation of errors was done using the Durbin-Watson test. It can take values between 0 (positive linear autocorrelation) and 4 (negative linear autocorrelation). If its value is close to 2, it means that there is no autocorrelation of errors. In the study conducted, the value of the Durbin -Watson test is 1.941, close to 2, which means that there is no autocorrelation.

The multicollinearity hypothesis was tested using the VIF indicator. It has values less than 5 for all variables included in the model, which means that there is no multicollinearity between the variables in the model.

Based on these tests, we validate the multiple linear regression model, in the form:

$$UT = 0.399 + 0.035 \times ICC + 0.008 \times ISI + 0.026 \times MOD\_A - 0.072 \times Age + 0.049 \times Education + 0.026 \times Income$$

The obtained model confirms the direct correlation between the purchase of health insurance and the index of consumption behavior, the index of information sources, the method of purchasing insurance, the level of education and income, respectively an inverse correlation with age.

The greatest influence on the degree of access to health insurance is the level of education. Changing the level of education from primary education to secondary education, or from secondary education to higher education leads to a 4.9% increase in the degree of purchase of health insurance. An important influence comes from the consumption behavior index. One-unit increase in its level causes a 3.5% increase in the degree of use of health insurance. Population's willingness to purchase insurance products using online platforms has the potential to increase the degree of use of health insurance by 2.6%. In contrast, the preferential use of information sources with a higher degree of credibility can lead to an increase in the degree of use of health insurance by 0.8%. The only variable with a negative influence is age. One-unit increase in age group leads to a 7.2% reduction in health insurance utilization.

In order to highlight the changes in the intensity of the influence of different factors during the COVID-19 pandemic, a multiple linear regression model is proposed for the analysis of the use of health insurance in the last 3 years (UT_3Y). It includes 6 variables, of which 3 behavioral variables and 3 socio -demographic variables, but different compared to those used in the previous regression model, resulting from the correlation analysis. The general form of the regression model is:

$$UT\_3Y = \beta_0 + \beta_1 \times ISI + \beta_2 \times MAB + \beta_3 \times MOD\_A + \beta_4 \times Age + \beta_5 \times Education + \beta_6 \times Income$$

To validate this model and determine its parameters, we used the SPSS software program, obtaining the following results:

**Table 10**. Model Summary 2

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change | |
| 1 | .293 [a] | .086 | .071 | .48094 | .086 | 5,817 | 6 | 372 | .000 | 1,942 |

a. Predictors: (Constant), Income, MAB, ISI, MOD_A, Age, Education
b. Dependent Variable: UT_3Y
Source : Processing with the help of SPSS

**Table 11**. ANOVA – model 2

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 8,073 | 6 | 1,345 | 5,817 | .000 [b] |
| | Residual | 86,043 | 372 | .231 | | |
| | Total | 94,116 | 378 | | | |

a. Dependent Variable: UT_3Y
b. Predictors: (Constant), Income , MAB, ISI, MOD_A, Age, Education
Source: Processing with the help of SPSS

The coefficient of determination (R2) for this model increased to 0.086, which means that the variables included in the model explain 8.6% of the decision to purchase health insurance during the pandemic. The obtained model is statistically valid, the Sig indicator being equal to 0, lower than the significance threshold of 0.05.

Parameters of the regression model for the analysis of the use of health insurance during the COVID-19 pandemic (UT_3Y) are presented in Table 12.

**Table 12**. Coefficients – model 2

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Zero-order | Partial | Parthian | Tolerance | VIV |
| 1 | (Constant) | .196 | .176 | | 1,114 | .266 | | | | | |
| | ISI | .014 | .008 | .086 | 1,639 | .102 | .154 | .085 | .081 | .898 | 1,113 |
| | MAB | .053 | .018 | .148 | 2,952 | .003 | .178 | .151 | .146 | .972 | 1,029 |
| | MOD_A | .069 | .052 | .067 | 1,319 | .188 | .124 | .068 | .065 | .948 | 1,055 |
| | Age | -.057 | .028 | -.106 | -2,058 | .040 | -.165 | -.106 | -.102 | .925 | 1,081 |
| | Education | .053 | .043 | .065 | 1,228 | .220 | .133 | .064 | .061 | .887 | 1,127 |
| | Income | .033 | .020 | .084 | 1,636 | .103 | .138 | .085 | .081 | .923 | 1,083 |

a. Dependent Variable: UT_3Y
Source: Processing with the help of SPSS

Durbin -Watson test was applied also for this model. The result of 1.942 (Table 8) , close to 2, signifies that there is no autocorrelation of errors for the proposed model.

The hypothesis of multicollinearity was tested using the VIF indicator. Values of this indicator lower than 5 for all variables included in the model concluded that there is no multicollinearity between the variables in the model.

Under these conditions, the multiple linear regression model is validated, with the following form:

*UT_3Y = 0.196 + 0.014 x ISI + 0.053 x MAB + 0.069 x MOD_A – 0.057 x Age + 0.053 x Education + 0.033 x Income*

This model confirms the direct correlation between the use of health insurance over the last 3 years and the index of information sources, the motive for choosing the insurer, the method of purchasing the insurance, the level of education and income, respectively an inverse correlation with age.

We found that, during the COVID-19 pandemic, the greatest influence on the decision to purchase health insurance was the method of purchase. The online purchase option has significantly increased its influence compared to the pre-pandemic period, generating a potential increase in the degree of use of health insurance by 6.9%. Also, the reason for choosing the insurer has become a relevant factor, unlike the situation before the pandemic. Elements such as "level of coverage" have become much more important in the decision to purchase health insurance than "recommendation of a friend". One-unit increase in the score related to the reason for choosing the insurer caused a 5.3% increase in the degree of use of health insurance.

The importance of the index of information sources has also increased. Thus, the preferential use of information sources with a higher degree of credibility lead to an increase in the degree of use of health insurance by 1.4%, a value higher than that of the period before the pandemic (0.8%). Changing the level of education from primary education to secondary education, or from secondary education to higher education led to a 5.3% increase in the degree of use of health insurance.

Consumption behavior, which was an important influencing factor in the period before the COVID-19 pandemic, no longer exerted a relevant influence in the last 3 years.

Age remained the only variable with a negative influence on the purchase of health insurance, even in the analysis of the last 3 years. The increase by one unit of the age group led to the reduction of the degree of use of health insurance over the last 3 years by 5.3%, a value lower than that related to the pre-pandemic period.

Important changes are thus highlighted in the factors that influenced the decision to purchase health insurance during the COVID-19 pandemic compared to the previous period. The influence degree was modified - new determinant factors were recorded (the motive for choosing the insurer),

other factors increased their influence (the method of purchasing the insurance and the index of information sources), and other factors reduced the intensity of their influence, becoming irrelevant (the consumption behavior index).

## 4. Discussion

The results of the research led to the validation of some previously formulated research hypotheses and the invalidation of others, as follows:

- Hypothesis H1 - " People with appropriate consumption behavior tend to take out private health insurance " was validated for the entire analyzed period, but was invalidated during the COVID-19 pandemic, which leads us to the conclusion of the partial validation of this hypothesis;
- Hypothesis H2 – " The source of information directly influences the decision to purchase insurance " was validated in both scenarios;
- Hypothesis H3 - " People willing to save prefer to take out insurance " was invalidated in both scenarios;
- Hypothesis H4 - " Benefits of insurance products determine the purchase decision " was validated only for the period of the COVID-19 pandemic, being invalidated for the entire period, which leads us to the conclusion of the partial validation of this hypothesis;
- Hypothesis H5 - " The use of digital solutions in insurance leads to an increase in access to health insurance " was validated in both scenarios.

We found that out of the 5 research hypotheses formulated, based on the research carried out, 2 hypotheses were fully validated, 2 hypotheses were partially validated, and one hypothesis was invalidated.

Authors should discuss the results and how they can be interpreted from the perspective of previous studies and of the working hypotheses. The findings and their implications should be discussed in the broadest context possible. Future research directions may also be highlighted.

In this paper we analyzed the main factors determinant for the purchase of private health insurance, based on evidence of a Romanian study. In insurance underwriting, the consumption behavior and the financial behavior of the consumers may be of utmost importance in assessing the probability of contracting a new policy as well as the range of coverages offered by the product.

We undertook testing five hypothesis that would be useful for future actuarial computations and product developments. As in other studies, the results do not support a positive correlation all the time among the variables studies giving documentation to advantageous selection and not adverse selection. As expected, the abrupt development of digital solutions created by the COVID19 pandemic encouraged the purchase of private insurance – as flexibility of the online stressed out the benefits of time and client relationship management that otherwise would not have been observed. Moreover, due to the pandemic, the trust in the official sources of information became one evident factor taken into consideration when deciding to contract a private health insurance as fake news and unreliable medical explanations invaded our lives and generated confusion.

Age, income, and level of studies offer a positive correlation with the decision to buy a private health insurance – a conclusion reached also by other studies on national markets. Cognitive ability determines the healthier consumers to purchase private insurance for reasons of convenience or benefits offered by private hospitals and therefore outnumber those with poorer health conditions that access private insurance only in case of fragile health status.

Our results offer insights into the factors important in the purchase decision of individuals, as private insurance complements the public health sector. Despite the low level of costs in the public system, consumers may be more attentive to private solutions of health care as long waiting lists or limited access to basic medical services may reduce the openness to national system.

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