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Supporting the tourism management decisions under the pandemic's impact. A new working instrument

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ABSTRACT

Since the onset of the pandemic, the tourism has undergone a significant compression that could destabilize both the tourist flows and the economic agents in the industry. This analysis is based on real working assumptions that bring together elements of an economic, social and health nature with a significant impact on tourism activity in the EU. The main objective of the research is to develop a decision support model to identify and implement immediate measures for tourism recovery in Europe. The used research methods consisted of literature review, observational study and data collection, data analysis and modelling, model testing and hypothesis validation. The research results consist in conceptualizing and implementing a smart SMMT model regarding the evaluation of causal relations between endogenous and exogenous factors that determined the economic destabilization of European tourism and the fruition of these results in a working tool based on SWOT analysis. This analysis is able to support the tourism management decision for the industry recovery in the immediate future.

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1. Introduction

It is no doubt that the human society are facing to an unbelievable complex crisis which is far away of finishing. The complexity of this crisis covers economic, social, political, sanitary or military components.

The economic contraction and the lockdown affected all economic industries, including the tourism. For the decision makers in tourism the situation is worse. They are facing to a lack of specific information and to a hostile economic environment.

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On the other hand, the population was forced to accept a new approach about tourism. This is why the domestic tourism is revering faster than the international one. The international tourism is facing to different sanitary barriers and the transport of the tourists is more difficult.

All these above evolutions are asking for a resizing of the touristic activities in accordance to the new conditions. The humans are social beings and will continue to travel away or on shorter distances during this pandemic. As a result, the tourism decision makers are needing for a new approach able to support them in dimensioning the tourism structure and trend on short time.

These aspects motivate the need to research the economic decline of European tourism in the context of the Covid 19 pandemic and identify immediate solutions for recovery. Thus, this research aims to achieve the following objectives:

O1: Identify from the literature contextual analyses of the influencing factors that led to the economic crisis in tourism after the outbreak of the pandemic.

O2: Identify trends in the main European/national tourism indicators.

O3: Assessing trends and forecasting turning points for economic recovery in tourism.

O4: Setting up the SWOT diagram as an operational analysis tool.

O5: Design, test and implement an econometric model on the basis of which policy changes in European tourism can be made.

The results of the study will lead to the clarification of vulnerable issues in the tourism sector and will allow decision-makers to clarify management objectives for the sector.

This is why the new approach proposed in this paper will be usefully for both theory and practice. It is based on a new model which is well connected to the reality on the ground.

1.1. Structure of the paper

The paper is structured on 4 chapters. The introductory chapter gives an overview of the economic, social and health situation across the EU under the impact of the current pandemic and justifies the need of analyzing the effect of this situation on the tourism in relation to the research set of objective.

The literature review comes to confirm the need for new approaches and new practical tools able to offer viable solutions for the decision makers in tourism.

An important chapter of this scientific approach is the Methodology chapter, which presents the logical scheme of the study, the working hypotheses and details the SMMT conceptual model.

The most consistent chapter, that of Results and discussions, addresses the implementation and piloting of the conceptual model, the transposition of the SWOT diagram's results and the working hypotheses' validation.

The Conclusions briefly present the research's results, the limits of the study and its usefulness for the decision makers in tourism.

2. Literature review

The COVID −19 pandemic is one of the most tragic pandemics in recent decades, with an extremely high potential for infecting with the virus causing the disease, while the long-term effects on individuals are still on the verge of unknown. Currently, reducing the loss of human lives has become an absolute priority (Assaf & Scuderi, 2020).

As Chang et al. (2020) point out, COVID-19 has transformed the world forever in every thinkable way and has seriously affected all individuals and all economic sectors in a different way than other large-scale events such as 9/11, SARS (2002-2003), MERS (2012), and the Global Financial Crisis (2007-2009) through their long-term effects on the business environment and the international community. The economic and social landscape has undergone dramatic changes in just a few months (Bashir et al., 2020).

Despite the remarkable progress of the medical sciences, the threat of pandemics has become increasingly evident since the second half of the twentieth century. Pandemics are an important feature of society and economy, even if their origins are rooted outside them; however, according to Hall et al. (2020), the public, businesses and policy makers have either ignored or even forgotten many of their potential threats and the actions needed to manage them. They have aroused quite much interest in academia and even in international organizations, but this interest has had an insignificant impact on macro- and microeconomic policies and strategies, although there is already a consensus on the health risks of animal and human populations arising from tourism activities in remote locations (Coker et al., 2011), as well as the risks that pollution associated with the development of transport raises on the health of individuals and especially on the respiratory health (Konstantinoudis et al., 2020; Wu et al., 2020). Finally yet importantly, as Hall et al. (2020) also emphasize, it is expected that climate change, which is influenced by tourism, but which also affects the tourism, will increase the frequency of diseases and pandemics.

The risk of large-scale pandemics is increasing because of a complex of factors with a manifestation fuelled by globalization and global transformations to which tourism contributes and is shaped (Burkle, 2006). Thus, extended urbanization translated into an increasing population density makes social distancing difficult and amplifies the potential of diseases with contact and proximity transmission (Bashir et al., 2020; Connolly et al., 2021; Geng & Zhang, 2020; Hall et al., 2020)). As a direct consequence of the development of transport, these urban centres are increasingly interconnected, which creates numerous channels for disease transmission and spread (Connolly et al., 2020). In this context, the consumption habits of the population and the reduction of biodiversity expose individuals to the action of pathogens, amplifying the potential for contagion (Devaux et al., 2019). To these are added some indicators related to socio - demographic characteristics, the institutional and cultural context (Connolly, 2019; Messner, 2020), but also the level of income, the number of people in a dwelling (Bashir et al., 2020), etc.

During the time, new pandemics and diseases have had a transformative effect on the environment and societies. Colonialism and the Europeanization of the New World, for example, brought many diseases of the Old World, diseases that decimated

part of the indigenous populations of America, Australia, Asia and the Pacific (Diamond, 1998). Nor has Europe been exempt from epidemics and diseases whose transformative effect has spread through their demographic impact, which in turn has had effects on production systems and the ability of societies to adapt to external changes (Hall et al., 2020).

Currently, the profound interdependence that describes the world economy, globalization and technology have become sources of a synchronized fragility that can generate change and turbulence at any time (Kotler & Caslione, 2009). In this economic habitat, as Chang et al. (2020) remark, the coronavirus pandemic has induced unprecedented changes in the recent decades. At the same time, the vulnerability of the world's major economies, including the US, has worsened as economic growth has slowed, becoming less able to absorb shocks; the pandemic facing the world today could most likely trigger a real recession (generated by a severe economic contraction, usually induced by wars, disasters or other major disruptions) (Carlsson-Szlezak et al., 2020).

The implementation of full or partial lockdown measures, with significant impact on economic activities, will also reconfigure post-pandemic economic and social expectations and objectives (Bashir et al., 2020). It is estimated that governments will not be able to minimize the loss of lives and economic impact of the pandemic at the same time and that the economic losses will be much higher than the costs of preventive measures implemented to combat the spread of the pandemic (Anderson et al., 2020).

By virtue of the Syracuse principle, governments have used emergency prerogatives justified by the need to curb the spread of the virus and the loss of human lives, which have limited or allowed derogations from some economic, social and cultural rights (Baum & Hai, 2020). As a result, international transport (in some cases even the domestic one) and the tourism industry in many countries around the world have significantly reduced their operations. Beyond the hospitality industry, the current pandemic has affected the supply chains, consumption, production and prices of all products, including fossil fuels and renewable resources (Chang et al., 2020). Moreover, international trade, foreign direct investment, international banking, etc. have been severely affected; in the impacted sectors, most firms are small and medium-sized, which makes them vulnerable to a prolonged period of lockdown (CCSA, 2020). Although the limitation of economic activities has led to an improvement in air quality, the coronavirus pandemic has also put pressure on the environment by increasing the amount of medical waste and other waste resulting from measures to protect and combat the spread of the virus (Bashir et al al., 2020).

Compared to other economic sectors, tourism is much more vulnerable to crises or disasters (Chen et al., 2021; Geng et al., 2020). Faulkner (2001) underlines the vulnerability of tourist destinations to disasters of various kinds, at one time or another in their history. According to Faulkner and Russell (2003), crises and disasters excellently illustrate the theory of chaos and complexity in the context of tourism. Crises and disasters in tourism are not a new phenomenon, especially as tourism globalizes and the number of tourists' increases; events such as terrorist attacks, natural disasters, political instability, wars, economic recessions, biosecurity, pathological threats, etc. occur with increasing frequency (Cro & Martins, 2017; Hall, 2010).

The literature on the nexus between pandemic crises and tourism is emerging in several avenues. A first research stream is concerned with the impact of risk perception and fear of travel on tourism demand. Over the years, the global tourism industry has been seriously affected by crises and disasters of various kinds. Between 2000 and 2015, major disruptive events included the terrorist attacks of 9/11 (2001), the Severe Acute Respiratory Syndrome (SARS) epidemic (2003), the global economic crisis of 2008/2009 and the Middle East Respiratory Syndrome (MERS) epidemic of 2015. As Gössling et al. (2021) show, in the long run, none of these events have triggered a dramatic decline in global tourism development; the only ones that have induced downturns in international arrivals are SARS and the global economic crisis. This finding can be interpreted as an assumption that tourism as a system has been resilient to external shocks. Instead, many issues point to the fact that the impact and recovery from the COVID-19 pandemic will prove to be somewhat historically unique.

Travellers' perceptions of risk and personal safety significantly shape patterns of tourism demand, with tourism, especially international tourism, being highly sensitive to safety and security issues. Over the past decades, international tourists' travel decisions have been largely conditioned by external events such as fear of pandemics and terrorist attacks (Seabra et al., 2013). There are varied groups of tourists who have heterogeneous perceptions of the risks associated with international travel, although such perceptions are subjective in their nature. Seabra et al. (2013) report that while these segments do not differ in terms of gender, age, education or their experience with domestic and international travel, notable differences have been observed in relation to other aspects, such as income, reasons for travel, contact with crime in everyday life and nationality.

Kuo et al. (2008) investigates comparatively the impact of infectious diseases such as avian influenza and severe acute respiratory syndrome on tourism demand as expressed by the number of international tourist arrivals in Asian countries. They start from the premise previously put forward by Page et al. (2006) that avian flu could affect the tourism industry much more severely than previous crises if it turned into a pandemic. Using single datasets and panel data techniques, the authors conclude that tourism demand was significantly reduced for Asian countries affected by SARS in 2003, but not for countries affected by Avian influenza.

In June 2009, the UNWTO reported that the outbreak of a new influenza virus, subsequently known as 2009 H1N1, had magnified the already severe impact of the global economic crisis on international tourism; although to varying degrees from region to region, all countries except those in Africa and South America experienced large falls in tourism demand (Lee et al., 2012). Using a group of potential Korean international tourists as a sample, Lee et al. (2012) explain the decision-making mechanisms of tourists through the lens of the Model of Goal-Directed Behavior (MGB), which integrates motivational, affective, and past behavioral processes to more accurately anticipate the decision-making processes of travel consumers and includes perceptions of 2009 H1N1 and NPIs (non-pharmaceutical personal interventions) that may respond to this threat. NPIs involve better knowledge of the disease and the pandemic, improving personal hygiene practices during travel, using social distancing to

avoid people or places likely to be contaminated, and monitoring personal health before and after travel (WHO, 2006). Considering the constraints related to the effectiveness and availability of pharmaceutical interventions especially in the early stage of an influenza pandemic, NPI reflects adaptive risk-limiting behaviour. The main evidence led to the conclusion that perceptions of the 2009 H1N1 virus did not affect potential tourists' willingness to travel internationally, as long as they considered this type of adaptive behaviour aimed at attenuating the risk of infection to an acceptable degree for them.

The 2014 Ebola outbreak has once again put the tourism industry in a challenging situation, especially in the USA, as the response to an outbreak often affects anxiety levels and travel intentions. Cahyanto et al. (2016) assesse the opinions and perceptions of 1613 random adults in the US in October 2014 (collected via an online survey) based on constructs derived from the Health Belief Model (HBM) which, according to the authors, allows for examination of variables that predict, influence, and explain why individuals engage in certain risk behaviors. While it is clear that the Ebola outbreak has not had the same impact as previous outbreaks, there have still been concerns from travellers and government travel warnings. The results pointed to several predictors that could lead to avoidance of domestic travel in light of Ebola cases, many of which are contradictory in nature and not well documented in the literature on travel risk and infectious diseases. The majority of respondents in this survey rated Ebola as a serious danger and thought they would take protective measures in response to the outbreak. However, most of them also manifested a minimal intent to avoid travel. Essentially, it was observed that subjects with a higher perception of risk, perceived susceptibility and subjective information were more likely to avoid domestic travel, while participants with a higher level of self-efficacy expressed a lower propensity to avoid travel due to Ebola.

However, the current pandemic may herald a paradigm shift in research on tourist behaviour and decision-making, demanding a reconsideration of the assumptions underlying previous theoretical constructs and empirical models. This pandemic has reactivated individuals' existential anxieties about their physical and economic vulnerability. As Kock et al. (2020) point out, in such situations evolutionary protective mechanisms, deeply embedded in our human nature, are enabled, which is why evolutionary psychology offers appropriate approaches and tools to understand the impact of the coronavirus pandemic on the psyche of tourists, thus generating new insights. By applying the ocean and islands model, the authors explain the COVID-19 pandemic as an ecological determinant, specifically as a pathogenic threat that has considerably reshaped the global ecology. The use of evolutionary reasoning allowed the authors to observe that a number of key psychological concepts such as ethnocentrism, xenophobia and perceived crowding are linked to the perceived risk of COVID-19 infection, which significantly influences their consumption decisions and tourism demand. In the long term, although the pandemic will pass and travel barriers will be removed, the psychology of travel consumers may shift to a state of new equilibrium.

Tourism is, by its very nature, perceived as a high-risk activity. Zheng et al. (2021) advance the concept of pandemic "travel fear" and show that a pandemic can trigger

travel fear in people. In a study merging theoretical perspectives such as Protection Motivation Theory and Adaptation and Resilience Theory, based on an online survey among 1208 respondents in mainland China, the authors have found that threat severity and threat perception can unleash travel fear, which drives protection motivation and protective travel behaviors after the pandemic outbreak. Rather than considering tourists as rational risk evaluators, this study expands prior investigations in this area by exploring the role that fear exerts in coupling perceived threat and protective motivation. The findings also concluded that this travel fear could foster the use of various coping strategies, which enhances people's psychological resilience and favours cautious travel behaviour.

Along the same vein of argumentation, Bae and Chang (2021) have adapted the concept of 'untact' to tourism in order to explore a new behavioural pattern among tourists during pandemics. 'Untact' is taken as an umbrella concept to connote a 'new normal' tourism behaviour that responds to individuals' desire to travel even under pandemic conditions, while mitigating perceived risks of disease. Drawing on concepts that ground the Health Belief Model and the extended Theory of Planned Behaviour, this study investigates the influence of COVID-19 risk perception on behavioural intention towards contact-free tourism. The main findings report that affective risk perception is a strong premise of attitude, while cognitive risk perception exerts a positive influence on subjective norms. Despite the considerable impact of cognitive and affective risk perception on behavioural intention, affective risk perception shows a negative influence on behavioural intention. It was also observed that attitude was a considerable mediator between affective risk perception and behavioural intention, while subjective norms were mediators of the link between cognitive perception and behavioural intention.

Another recent study provides evidence in the same regard, but goes a step further in an attempt to profile segments of tourists that differ in two time points in terms of perceived risk on COVID-19, perceived risk of travelling during the pandemic and travel behaviour, in particular changing, cancelling or avoiding travel (plans), and to investigate the differences between segments through the lens of individual characteristics (Neuburger & Egger, 2021). (The data analysis revealed three unique clusters in both periods with distinct characteristics. At the same time, the results suggested a significant increase in COVID-19 risk perception, travel risk perception and travel behaviour in a short period of time. Perhaps one of the most insightful observations is related to the different distribution of clusters when comparing the two time periods. In essence, these results highlight that travel risk perception potentially causes travel anxiety in a short period of time.

Another broad stream of research is focused on the impact of Covid-19 on tourism and the reconceptualisation of its development following the principles of sustainable development. The coronavirus pandemic has already significantly affected tourism, forcing many businesses in this industry to lay off employees and close temporarily, if not permanently. It is estimated that the loss of jobs in tourism could reach about 50 million globally (Benjamin et al., 2020; Zenker & Kock, 2020). There are also fears that up to 75% of small businesses in the hospitality industry in the US and Europe may not reopen after the pandemic (Baum & Hai, 2020). A growing body of

literature also reflects a heightened attention to the issue of Covid-19's impact on jobs and the status of tourism employees; the structural features of the tourism industry foster significant precariousness and vulnerability for hospitality workers (Baum et al., 2020). Tourism is less knowledge intensive service category, being one of the most important employers globally. However, unlike other significant employers, such as, for example, the energy industry, tourism, not being a necessity, is very sensitive to shocks (Chang et al., 2020). At the same time, the vast majority of businesses in the tourism industry fall into the category of those that tend to reopen last (Baum & Hai, 2020).In such conditions, many questions about the recovery scenarios, the role of governments, consumer behaviour, etc. arise. The literature tends to reach a consensus on the need to reform the sector and establish a new post-pandemic normalcy in the tourism industry and less on a return to normal (Ateljevic, 2020; Brouder, 2020; Galvani et al., 2020; Higgins-Desbiolles, 2021; Lew et al., 2020; Nepal, 2020; Niewiadomski, 2020). Benjamin et al. (2020) even argues for the impossibility of returning to normal, since what we considered normal was, in fact, the problem. Over time, tourism has brought to the forefront a number of systemic inequalities that have partially fuelled the dilemma in which industry and its communities now find themselves. Higgins-Desbiolles (2010), analysing the culture-ideology of consumerism expressed as the right to travel in the era of corporate tourism, concludes that a system supposed to grow continuously is inherently unsustainable when we experience the reality of limitation of resources. Benjamin et al. (2020) point out that the current pandemic has apparently caused a crisis in the tourism industry, but in reality, the pandemic has exposed the crises and tensions that existed in the industry. In the same line of reasoning, Gretzel et al. (2020), Everingham and Chassagne (2020) portray COVID − 19 as a crisis having its roots in economies shaped by traditional growth paradigms. The context of the current crisis has created a space to rethink the way in which the tourism economy could be redefined, represented and reconfigured (Brouder et al., 2020). Hall et al. (2020), however, question the transformative possibilities given that the focus of most governments will be on job creation, even lower paid, occasional or part - time, in order to reduce the unemployment rate. The advocates of the more sustainable forms of local tourism believe that the coronavirus pandemic and the economic effects of measures implemented to reduce its spread will generate an exogenous shock that will change tourism public policy (Hall et al., 2020). A new vision must recognize the forgotten power of tourism as a social force and its transformative valences (Higgins-Desbiolles, 2006).

The dynamism of the tourism industry in recent decades has made tourism strongly connected to economic growth; the intense diversification makes tourism a competitive sector, increasingly globalized, with continuous needs for innovation. Sigalat-Signes et al. (2020) assert that innovation in tourism, in direct connection with information and communication technologies (ICTs), has transformed the way of operating by redesigning the forms of organization, processes and products of companies providing tourism services, but also the demand. History has shown quite frequently that a crisis can lead to technological innovation and development (Schumpeter, 1939) (Schumpeter, 2008) (Zeng et al., 2020).

Technology is already acknowledged as a key vector of change in tourism, as a catalyst and, in some cases, even as a disruptive feature (Gretzel et al., 2020). Fennell (2021) observes that ICTs will reshape the future of tourism management, tourism experiences and even the way tourists interact with others in time and space. Tourism is, by its nature, a" high-touch" industry that can exploit high-tech technologies to meet current challenges, but also to achieve sustainable development goals (Zeng et al., 2020).

On the one hand, technology is proving to be very effective and even essential in addressing issues related to the current pandemic, and a gradual translation from human interaction to technology is anticipated (Ilkhanizadeh et al., 2020; Ivanov et al., 2022; Seyitoğlu & Ivanov, 2021). In the long run, technology, robots and artificial intelligence can support the reducing of fixed costs, improving liquidity and resilience, but also maintaining social distance (Assaf & Scuderi, 2020). On the other hand, there are concerns about society's response to the crisis, in terms of vulnerability, confidentiality, misinformation and ethics in the use of technology (Gretzel et al., 2020).

Information intensity and increasing dependence on ICTs have fuelled a logical progress from traditional forms of tourism to "smart" approaches (Gretzel et al., 2015). Smart systems/infrastructures developed especially for smart areas/zones are sine qua non conditions for development of smart tourism (Sigalat-Signes et al., 2020). Beyond the economic benefits, smart infrastructures in the context of tourism can influence travel experiences, but also the travel decision-making (Lee et al., 2020). Gretzel et al. (2015) emphasize that, on the one hand, these smart systems include a wide range of technologies that become the technological foundation for smart approaches in tourism and, on the other hand, ICTs applications and tools help tourism companies to become "smarter" in improving performance and competitiveness in a new context by transforming their functions and processes.

This analysis covers Objective 1 of the present research: to identify from the literature contextual analyses of the influencing factors that led to the economic crisis in tourism after the outbreak of the pandemic.

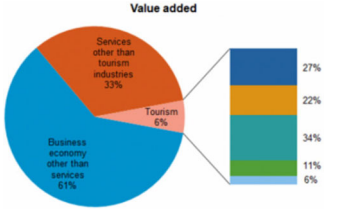
3. Methodology

To assess the impact of the health crisis on the European tourism, the authors of this article conducted a critical analysis of the effects of the health crisis, using information from Eurotat (Eurotat, 2020) and the European Commission (European Commission, 2020), based on the causal relationship between the tourism services consumer's behavior and the alert indicators regarding the illness of the population during the pandemic (the disease rate per 1000 inhabitants).

The analyzed relationship was harmonized with the macroeconomic context evaluated in terms of instability and economic setback, elaborating in a first stage the causal matrix of the dysfunctions in tourism, as in Table 1:

In the second stage, based on the matrix projected above, we proceeded to identify a smart management model. This model evaluates the impact of the proposed

Table 1. The causal matrix of the dysfunctions in tourism.

Favoring factors	Impact at the beginning of the crisis	Short-term effect	Medium term expected effect	Remedial options
Triggering the health crisis	The volume and tourist flows reduction	Tourist flows reorien-tation to the indigenous segment	Slow recovery of the environment conducive to the tourism relaunch	According to H1 (see it below), the tourism crisis will continue on the short term as long as the health crisis maintains its effects. In order to improve the activity, the SWOT model allows the maximizing of the use of the identifiable opportunities and strengths, respectively the recovering of the redundant GVA margins and increasing the customers' satisfaction using the tourist services. (European Commission, 2020, p.73).
Triggering the economic crisis	Reducing the GDP	Contraction of the economic activity	Contraction of the tourism economic activity	According to official statistics, the gross value added of the tourism activities is 6% of GDP. For the industry recovery, it is proposed to limit the influencing factors that reduce the tourist GVA in accordance with the dependency relations calculated by the Pearson coefficients (whose correlation exceeds 90%), respectively: Demand for investment in tourism (INVR-T), Reduction of the activity due to bankruptcies in tourism (ACTB-T) and Reduction of the tourist activities due to the increase of customers' dissatisfaction (ACTS-T).
		 https://ec.europa.eu/Eurotat/statistics-explained/index.php?title=File:Number_of_enterprises,_turnover,_value_added_at_factor_cost_and_number_of_persons_employed,_EU-27,_2017_(%25).png		
	Decreasing the purchasing power	Decreasing in the tourist demand (qualitative and quantita-tive)	Narrowing the tourist area in the country of origin	The increase of the consumers of tourist services' satisfaction significantly influences (over 80%) the purchase decision, as it results from the SMMT model proposed in this paper.
	Increasing the uneploy-ment and inflation rates	Reducing the quality of the tourist services	Increasing the consumer dissatisfaction towards the services' quality	The unemployment represents an exogenous factor favoring the economic compression of the tourism industry. Only the national authorities are able to intervene on this phenomenon through economic recovery programs. The industry-level measures do not have a significant influence on the phenomenon, as shown by the Pearson correlations.

(*continued*)

Table 1. Continued.

Favoring factors	Impact at the beginning of the crisis	Short-term effect	Medium term expected effect	Remedial options
	The emergence of the budget imbalances and the reduction in the infrastruc-ture invest-ments	Increasing the public debt and the branch taxing	The access to the tourist services' degradation	In order to recovery the industry, the tourist investments are able to take advantage of the opportunities identified by the SWOT analysis if and only if the demand for investment in tourism (INVR-T) correlation is performed in the bankruptcies in tourism (ACTB-T) and the increase of customers' dissatisfaction (ACTS-T) connection, with effect on GVA. All these correlations are found in the statistically significant high correlation table (over 90%).
Triggering the quarantine / emergency conditions / alert status	Limiting the people's movement and the tourist flows	The obvious decline of the tourist activities	Bankruptcy of the tourism operators which are dependent on the foreign market	The bankruptcy in tourism is directly related to gross value added (GVA) and the demand for investment in tourism (INVR-T). Thus, in order to limit the phenomenon, the increase of GVA and investments can be the solution of the economic operators' decline.
Increasing the restrictions in accessing the EU member states	Reducing the tourists' number; Difficult access to the tourist attractions.	Reducing the revenues obtained from tourism and increasing the consumers of the tourist products' dissatis-faction	Increasing dissatisfaction for both tourism operators and consumers of the tourism products	The satisfaction reduction can be limited by investments with a role in increasing the tourist services' quality and diversification. Considering that the dissatisfaction represents the main cause (apart from the health crisis) of the tourism industry decline, we consider that all due diligence must be done to restore this sensitivity indicator.
Increasing the restrictions on accessing the EU member states; Restriction on some activities in the public alimentation segment	Demand reduction	Major contribu-tion to the tourism activity's decline	Changing the demand structure for services to the agro-tourism	The satisfaction reduction can be limited by investments with a role in increasing the tourist services' quality and diversification. Considering that the dissatisfaction represents the main cause (apart from the health crisis) of the tourism industry decline, we consider that all due diligence must be done to restore this sensitivity indicator.

Source: made by the authors.

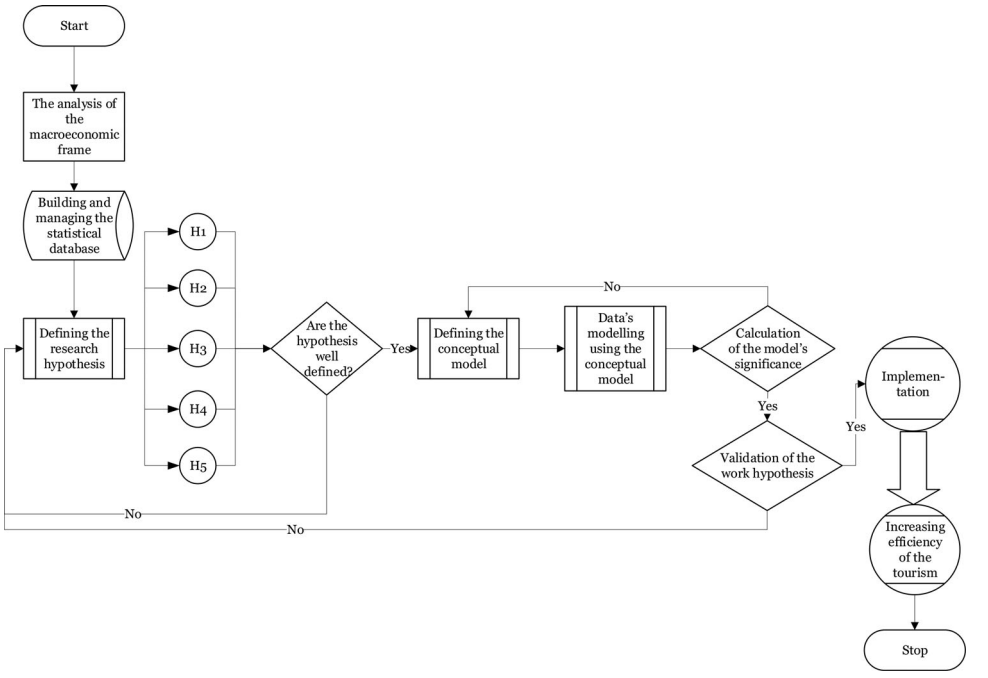


Figure 1. The scheme of the stated study.
Source: made by the authors.

measures' effectiveness on the economic dimension of the industry in terms of maintaining the health crisis and spreading its effects in tourism.

The building of the model is based on the following hypotheses:

H1. The evolving health crisis manifests its effects in 2021;

H2. A viable economic recovery can begin at the end of the health crisis;

H3. The tourism experiences a recovery slope at most equal to that of the national economy's recovery on short term;

H4. The sustainable management is enhanced in the conditions in which the service supply is placed in a safe area (city/town/region);

H5. The tourism recovery definitely contributes to the economic recovery.

According to the above hypotheses, the scheme of the stated study is presented in Figure 1.

Based on the above, we define the conceptual smart management model in tourism (SMMT) as the follows:

Let be M_S: R-> R^+, a.i. (∀) $f(M_s) = Q_M \cap I_M \cap V_M$, (∃) $M_S \neq 0$ which satisfies the relations:

1. $\lim(f(M_s))$ -> max (∀) $M_S \neq 0$;
2. $\lim(f(M_{s0})) < \lim((f(M_s))$, where $f(M_{s0})$ represents the unadjusted representation of the function during the sanitary crisis.

In the above relations:

Ms – the smart management vector defined at the tourist level;f(M_S) – the managerial vector function;

Q_M – the vectorial component of the tourist services quality by exercising the smart management;

I_M - the vectorial component of the tourist services intensity by exercising the smart management;

V_M - the vectorial component of the tourist supply stability by exercising the smart management.

We define the tourist supply based on an additional regression model of internal (indigenous) and external tourist flows as follows:

$$O_T = \sum_{i=1}^{3} \propto_i * FT_i = \sum_{j=1}^{n} (1 + C_j) * \left(\sum_{i=1}^{3} \propto_i * FT_{i_{t-1}} \right) \quad (1)$$

where: O_T – Total basic tourist supply (unadjusted version);

$\propto_i$ – regression coefficients of the tourist supply components;

FT_i – regressors (independent variables) that are part of the tourist supply;i ϵ (1,3), 1 – the domestic dimension of tourist flows (FT); 2 – the external dimension of tourist flows; 3 – the transitional component of tourist flows.j ϵ (1,n) – where n = the number of disturbing macroeconomic coefficients that affect in the dynamics (from one year to another) the tourist flows;

C_j – disturbing macroeconomic coefficients identified for the tourist supply as afferent to: GDP (gross value added GVA), inflation (decrease in purchasing power PPWR-T), unemployment (increasing unemployment in tourism INQR-T), public debt (demand for investment in tourism INVR-T) and health crisis (increase of customers' dissatisfaction ACTS-T, bankruptcies in tourism ACTB-T).

$FT_{i_{t-1}}$- the tourist flows from the previous year.

4. Results and discussions

In order to realise the practical evaluation of the proposed theoretical model, we used the statistical analysis of the data series published by the European Commission through Eurotat. We took into account the evolution of the GDP indicator in its entirety, given the statistical dissemination of the results on performance in tourism, which according to official data, have a net contribution of 6% to the real European GDP (see Figure 2).

From the GDP in tourism (GDP-T) point of view, the the statistical analysis of the frequency series showed that the European average decreased for all 27 EU countries by 8.6 bn. Euro, being assigned an average standard error of 2.86 bn. Euro. The distribution of the average compared to the median reflects the disparities of the European economies, the ratio between the average and the median being unfavorable to the median. As a result, the most EU economies recorded a loss of national GDP through the tourism segment of about 2.5 bn. Euro. Thus, a significant standard deviation in the EU group of 14.87 bn. Euro was calculated. It is almost double than the European average. Moreover, the flattening and the asymmetry have also significant

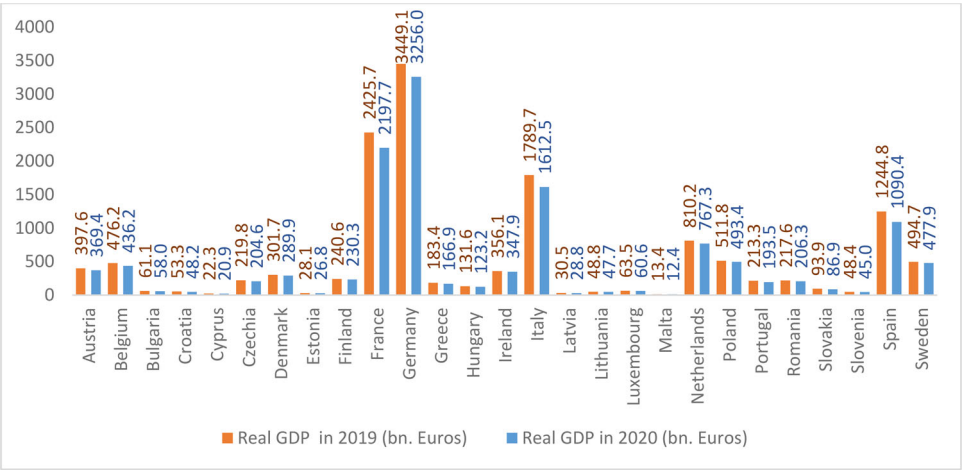


Figure 2. Real GDP's trend (bn. Euro).
Source: made by the authors.

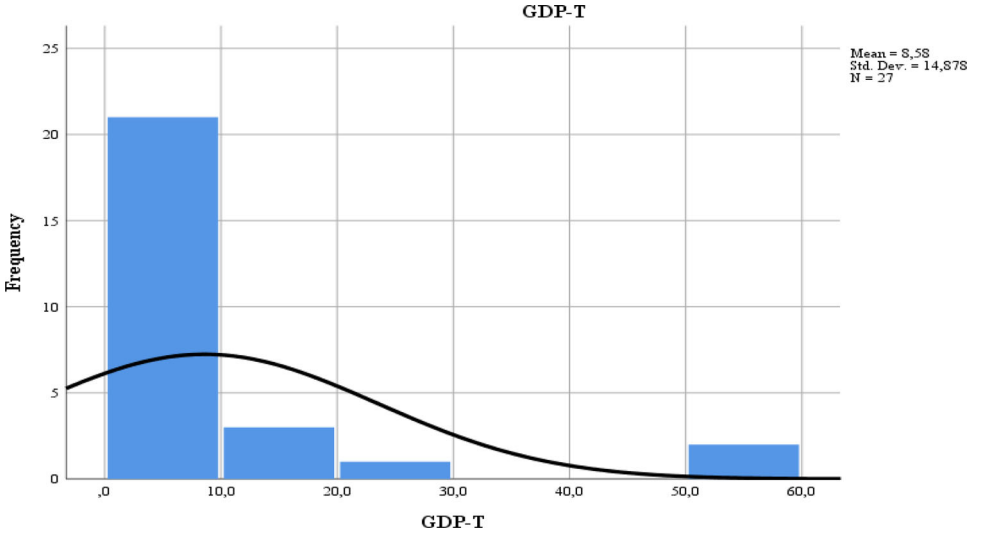


Figure 3. The loss of national GDP through the tourism segment uder Gauss' distribution.
Source: made by the authors.

values in the sense of the inhomogeneous distribution of the variable regarding the national outputs from tourism (see Figure 3).

Unlike GDP from tourism, the loss of value added in tourism (GVA) is 2.3 bn. Euro in 2020. The median is subunitary, the loss for most EU states being 0.7 bn euro of the value added to the tourism industry. Some EU Member States face to the loss of supra-unit value added (Spain, the Netherlands, Italy, France, Germany and Belgium). The inhomogeneity trend of the data series in the EU is reflected by the high values of the asymmetry. We must specify that, the structure of tourism has undergone significant changes in the sense of contraction to minimum levels during to the economic crisis (see Figure 4).

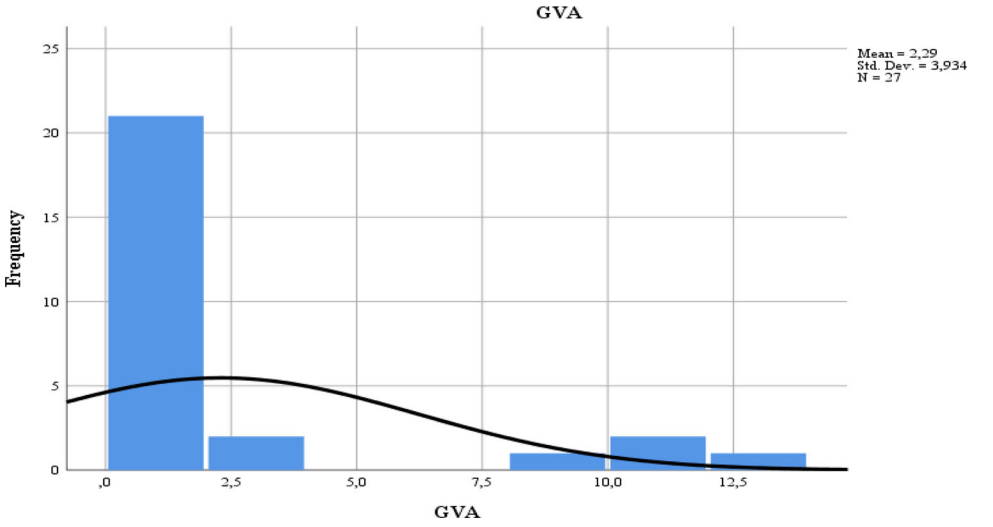


Figure 4. The loss of GVA through the tourism segment.
Source: made by the authors.

As aresult, there were protests of the tour operators and horeca that signaled the tourism's dysfunctions against the background of the pandemic and the passivity of the authorities in offering support for the alternative recovery measures.

The third analyzed indicator is the decrease in purchasing power (PPWR-T), respectively the reduction of purchase demand due to rising inflation after the pandemic, which completes the picture of the GDP reduction due to the contraction of the global economy and the value added in tourism's declining. A punctual analysis of the crisis period points out that the average purchasing power in the EU decreased by 0.23 bn. Euro per national economy, while the median, amid differences in economic structure in EU countries, tends to 0. The most affected states by the decline in purchasing power are: Austria, Belgium, the Czech Republic, the Netherlands, France and Germany, while the least affected ones are: Spain, Cyprus, Denmark, Greece and Italy. Thus, the standard deviation of national values exceeds the average decrease in purchasing power, which widens the flattening of purchasing power by 0.4 bn. Euro. The asymmetry is similar to that of GDP (2.5 bn. Euro, see Figure 5).

Another analyzed indicator is the reduction of the purchase demand as an effect of the rising unemployment (INQR-T). This indicator generates disturbances in the economic dynamics of the tourism industry in the amount of 8 bn. Euro at European level in 2020, with a national average of 0.3 bn. Euro. The median is located at 0.1 bn. euro, which demonstrates that the unemployment as an economic phenomenon, affected in the same way or in a similar way all EU states, generating more uniform disturbances at the level of the entire analyzed sample (lock down). Moreover, the standard deviation is 0.8 bn. Euro, and the asymmetry 4.12 bn. Euro (see Figure 6).

The demand for investments in tourism (INVR-T) was marked by recession during the pandemic, against the background of directing the effort towards the public health sector and the specific needs regarding social and social-sanitary protection. They suffered a reduction with a national average value of 3.6 bn. Euro and a median

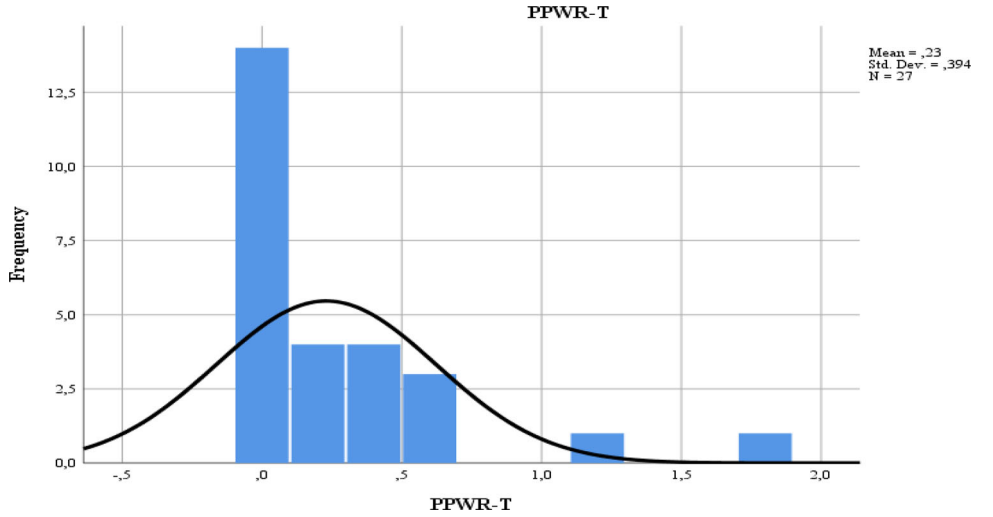


Figure 5. The decrease in purchasing power through the tourism segment.
Source: made by the authors.

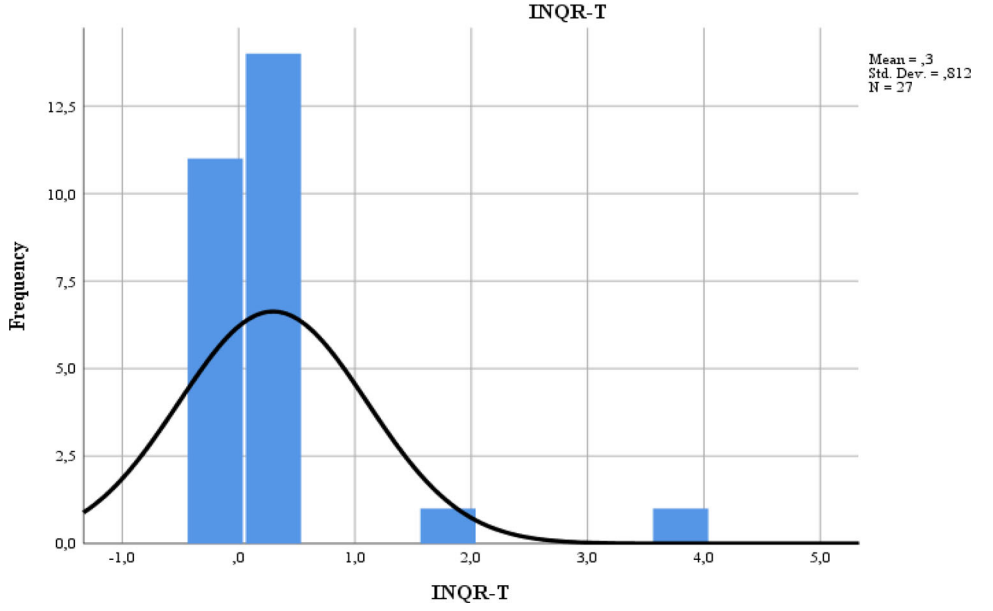


Figure 6. The effect of the rising unemployment through the tourism segment.
Source: made by the authors.

of 1.5 bn. Euro in 2020. This means that there have been some Member States that have been more disadvantaged by reduced investment (see Figure 7).

The most affected state was Germany (with 18 bn. Euro), followed by France (13.1 bn. Euro), Italy (12.6 bn. Euro) and Spain (7.8 bn. Euro). These states were hardest hit by the first wave of the pandemic.

The reduction of the activity due to bankruptcies in tourism (ACTB-T): following the analysis of the frequencies, the statistical evolution of the indicator is similar to that of the purchasing power, being able to estimate the fact that between the tour

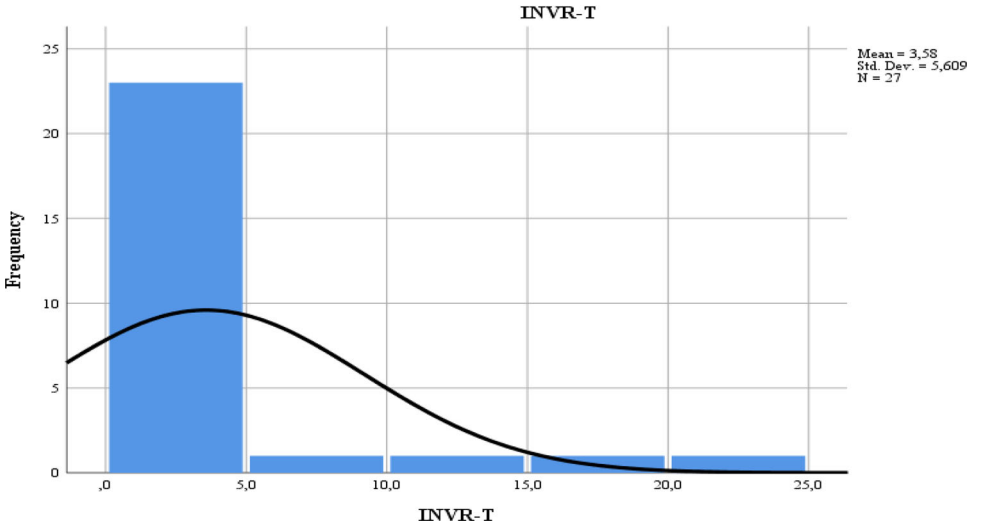


Figure 7. The demand for investments in tourism through the tourism segment.
Source: made by the authors.

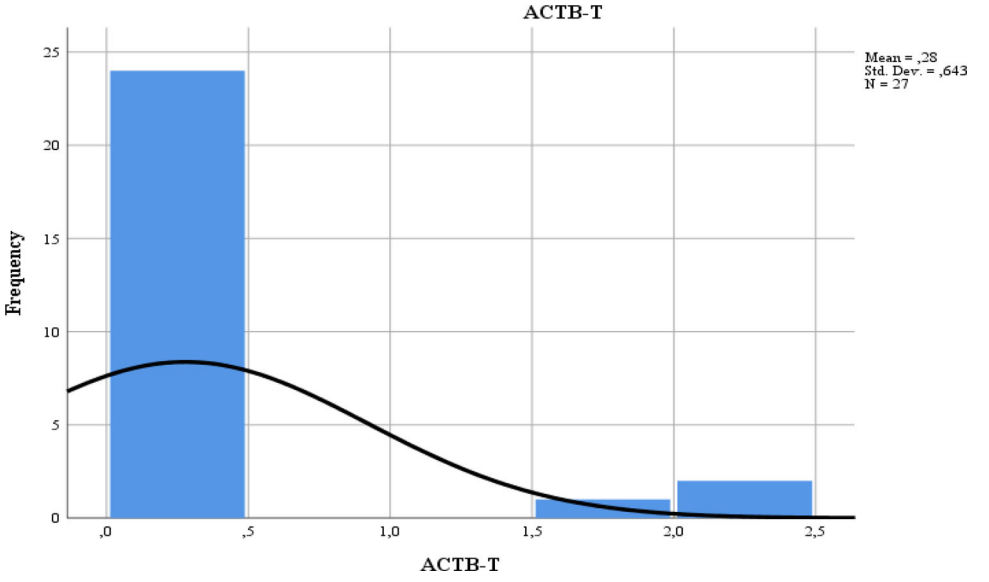


Figure 8. The reduction of the activity due to bankruptcies in tourism.
Source: made by the authors.

operators' phenomenon and the purchasing power reduction there is a direct dependence relationship.

The reduction of the purchasing power is the main cause of the bankruptcies on the background of the reimbursement of the equivalent value of the tourist packages paid in advance and of the limitation of the subsequent demand for tourist services. Thus, the average reduction of the tourist activity as a result of the bankruptcies in the 27 Member States reaches 0.3 bn.Euro, while the median tends to 0 in 2020 (see Figure 8).

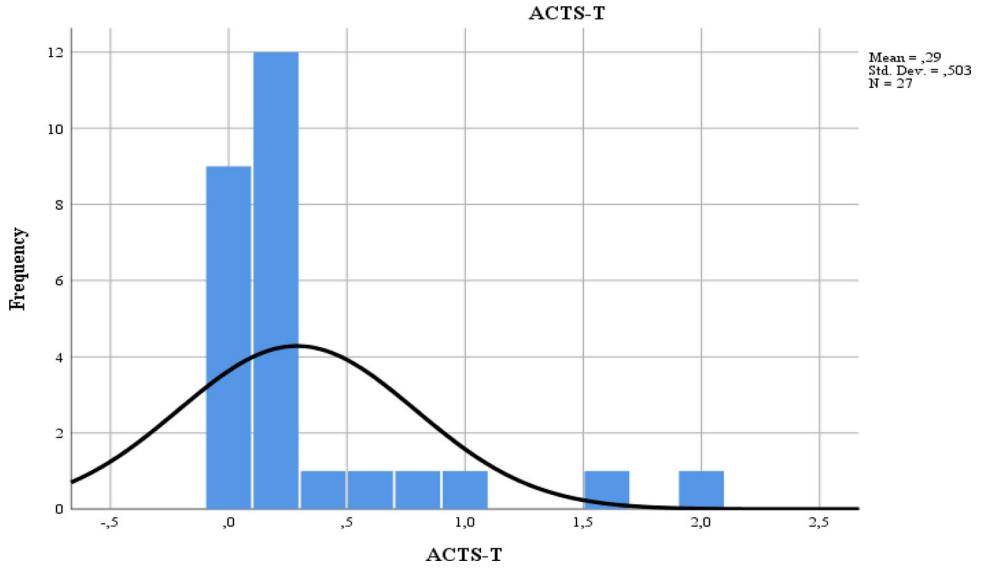


Figure 9. The impact of the increase of the degree of customer dissatisfaction.
Source: made by the authors.

This means that in some Member States, which had further developed the tourism sector, the phenomenon of bankruptcy was more intense (Italy, France, Germany, Greece, the Netherlands and Spain).

The reduction of the tourist activities due to the increase of the degree of customer dissatisfaction (ACTS-T) has a correspondent in the decrease of the tourist demand. It contributed to the contraction of the tourism by an average of 0.3 bn Euro, while the median of the indicator is represented by the value of 0.1 bn. Euro in 2020. The total contribution in the industry is consistent, of 7.8 bn. Euro to the macroeconomic contraction (see Figure 9). The Member States that have suffered as a result of growing customer dissatisfaction are more numerous than those that have suffered as a result of rising bankruptcies (9 compared to 6). The peak was reached in Germany, followed by France, Spain and the Netherlands.

In order to estimate the economic impact of the health crisis on the EU tourism economy, we used Eurotat reports on the number of nights spent and reduced accommodation costs on all 4 major components of European tourism: holidays, shopping, business and spas. This resulted in the dependent variable of the model defined as GDP reduction during the pandemic and the value of the economic contraction calculated for the 27 countries, which exceeds 230 bn. Euro.

The independent variables used in the calculation of the model were previously defined, namely: GVA, PPWR-T, INQR-T, INVR-T, ACTB-T, ACTS-T (see Table 2).

The Pearson correlation index (calculated for the linear regression model based on the least squares matoda) reflects the fact that the correlation value R between the dependent variable and the residual variables has a representation greater than 80% for all dependent variables excepting INQR-T.

Sigma coefficients for correlation were calculated that had statistically significant high values (sigma tends to 0) for all the mentioned above indicators. Using the

Table 2. Pearson correlation for the independent variables.

Correlations							
		GDP-T	GVA	PPWR-T	INQR-T	INVR-T	ACTB-T	ACTS-T
Pearson Correlation	GDP-T	1.000	.850	.866	.269	.876	.872	.919
	GVA	.850	1.000	.625	.480	.934	.936	.947
	PPWR-T	.866	.625	1.000	.208	.756	.663	.806
	INQR-T	.269	.480	.208	1.000	.405	.192	.513
	INVR-T	.876	.934	.756	.405	1.000	.931	.956
	ACTB-T	.872	.936	.663	.192	.931	1.000	.897
	ACTS-T	.919	.947	.806	.513	.956	.897	1.000

Source: made by the authors.

Table 3. The results of the Enter method's implementation.

Variables Entered/Removed[a]			
Model	Variables Entered	Variables Removed	Method
1	ACTS-T, INQR-T, PPWR-T, INVR-T, GVA, ACTB-T[b]	.	Enter

a. Dependent Variable: GDP-T; b. All requested variables entered.
Source: made by the authors.

Table 4. The Durbin-Watson test's results.

Model Summary[b]						
					Change Statistics	
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change
1	.963[a]	.928	.906	4.5618	.928	42.762

	Change Statistics			
Model	df1	df2	Sig. F Change	Durbin-Watson
1	6	20	.000	2.071

a. Predictors: (Constant), ACTS-T, INQR-T, PPWR-T, INVR-T, GVA, ACTB-T.
b. Dependent Variable: GDP-T.
Source: made by the authors.

whole sample selection method (ENTER) we noticed that it is appropriate to include in the study all variables without exceptions or excluded variables.

The model table is defined below (see Table 3).

Thus, we can define the econometric model of linear regression of the form:

$$GDP{-}T = 0.892 * \mathrm{GVA} + 15.931 * \mathrm{PPWR{-}T} - 1.843 * \mathrm{INQR{-}T} - .995 * \mathrm{INVR{-}T} + 6.260 * \mathrm{ACTB{-}T} + 15.505 * \mathrm{ACTS{-}T} + 0.767 \quad (2)$$

where: GDP-T - GDP in tourism; GVA – Gross Value Added; PPWR-T - the decrease in purchasing power; INQR-T – unemployment rising; INVR-T - demand for investments in tourism; ACTB-T - bankruptcies in tourism; ACTS-T - increase of the degree of customer dissatisfaction.

The level of statistical significance of the projected model regarding the impact of the economic crisis in tourism is 92.8%, and after the application of the standardization data procedure it is 90.6%. The change statistic and the R test indicate a high significance of the model (42.7 bn. Euro) with p-value tending to 0. The Durbin-Watson test tends to 2, which indicates a homogeneous and well-represented model

Table 5. The analysis' results under ANOVA conditions.

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	5339.295	6	889.882	42.762	.000[b]
	Residual	416.206	20	20.810		
	Total	5755.501	26			

a. Dependent Variable: GDP-T.
b. Predictors: (Constant), ACTS-T, INQR-T, PPWR-T, INVR-T, GVA, ACTB-T.
Source: made by the authors.

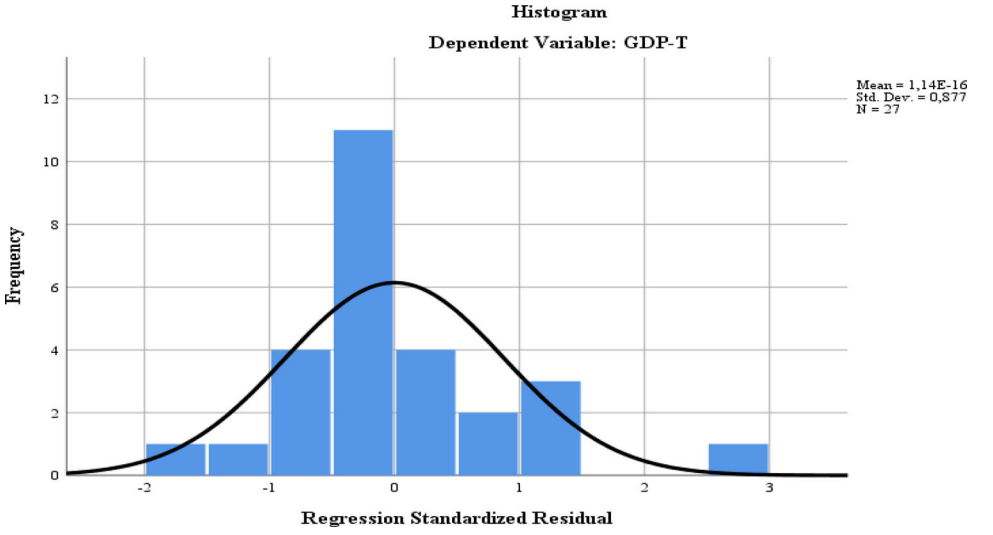


Figure 10. The slope of the values' distibution under GDP-T.
Source: made by the authors.

for all the 6 analyzed freedom degrees according to the change statistics (see Table 4).

The sum of the squares of the regression variables is strictly higher than the sum of the residual values, which demonstrates the homogeneity and representativeness of the projected statistical model, in our case (see Table 5).

Thus, the normal distribution of the dependent variable under the Gaussian curve was designed, which demonstrated an accumulation of values at the top of the ascending slope and a minimal residual distribution towards the end of the descending slope, according to the Figure 10.

The standardized regression diagram reflects the fact that the distances between the observational values of the dependent variable and the standard values are greater in the case of redundant economies (Bulgaria, Greece, Lithuania, Cyprus, Estonia). The rest of the EU states have high probability predicted values, according to the Figure 11.

From the reducing the tourist activity point of view through the adjusted values of the dependent variable, it is found that Germany, France, Italy, Spain, the Netherland and Austria are the main states affected by the tourism segment, the rest of the EU states showing a homogeneous dynamics (see Figure 12).

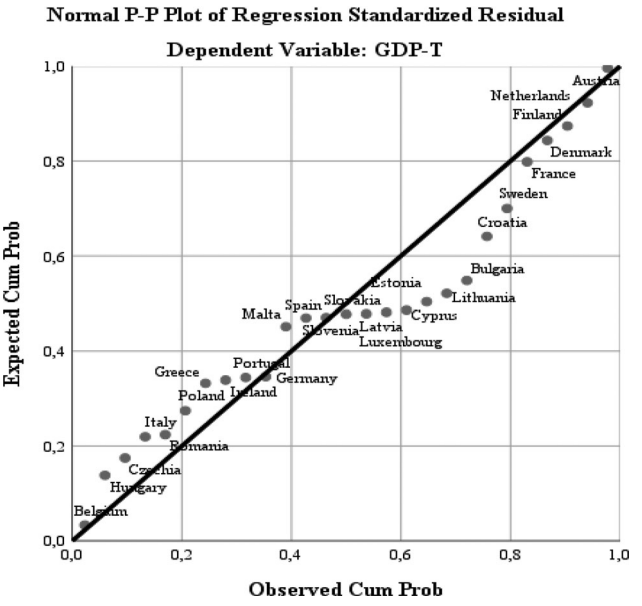


Figure 11. The regression standardized variables under GDP-T.
Source: made by the authors.

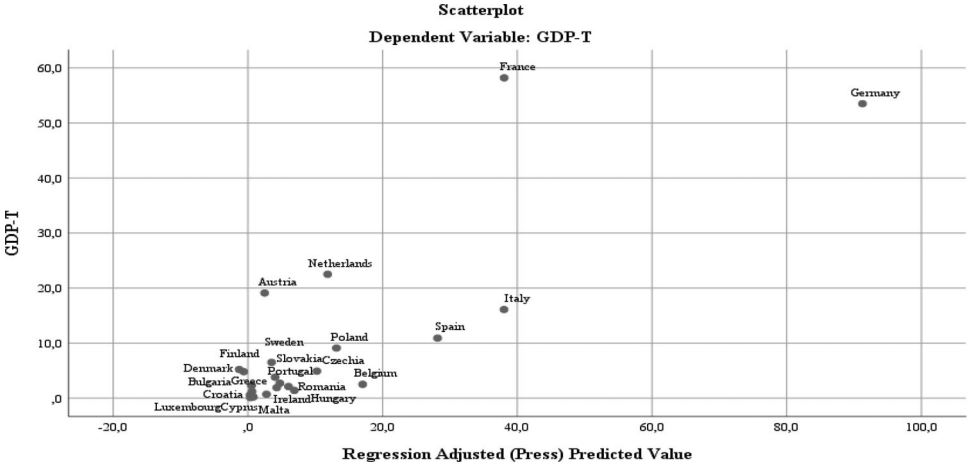


Figure 12. The main cluster under GDP-T.
Source: made by the authors.

In the case of the projected values of the dependent variable in relation to the decrease of the value added in tourism, the decrease is homogeneous the whole group of states having a centered dynamics of the evolution. Austria, Germany, Belgium and Poland are exceptions to this evolution (see Figure 13).

In these countries, the added value of the tourism sector has suffered a more significant reduction due to the economic impact of the pandemic combined with an increase in unemployment of at least 0.5-1.0% per year and a decrease in purchasing power of 0.8-3.5% per year.

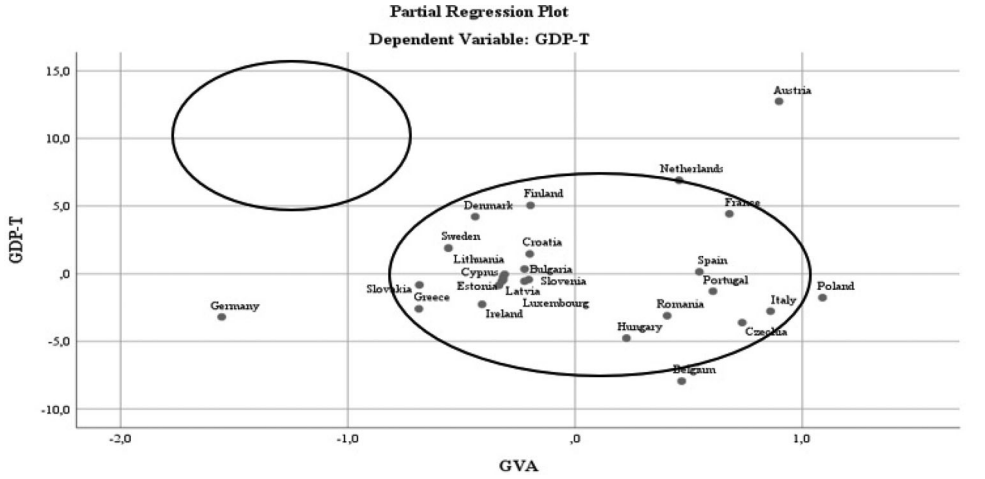


Figure 13. The main cluster in the case of the projected values of the dependent variable in relation to the decrease of the value added in tourism.
Source: made by the authors.

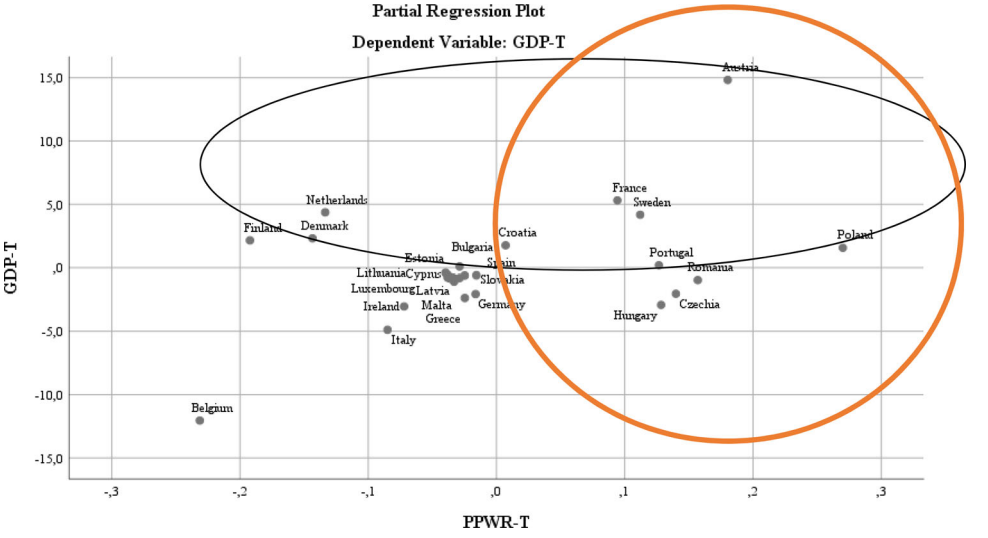


Figure 14. The main clusters in the case of the purchasing power.
Source: made by the authors.

The purchasing power has a polarized distribution in the sense that the developed countries that benefit from business, shopping and spa tourism (Netherlands, Denmark, Finland, Austria, France, Sweden) are affected for tourists attracted especially from Eastern European countries (Hungary, Czech Republic, Poland, Romania), (see Figure 14).

The reduction of tourism due to rising unemployment seems to be the weakest represented in terms of homogeneity and relationship by the Pearson coefficient with the dependent variable.

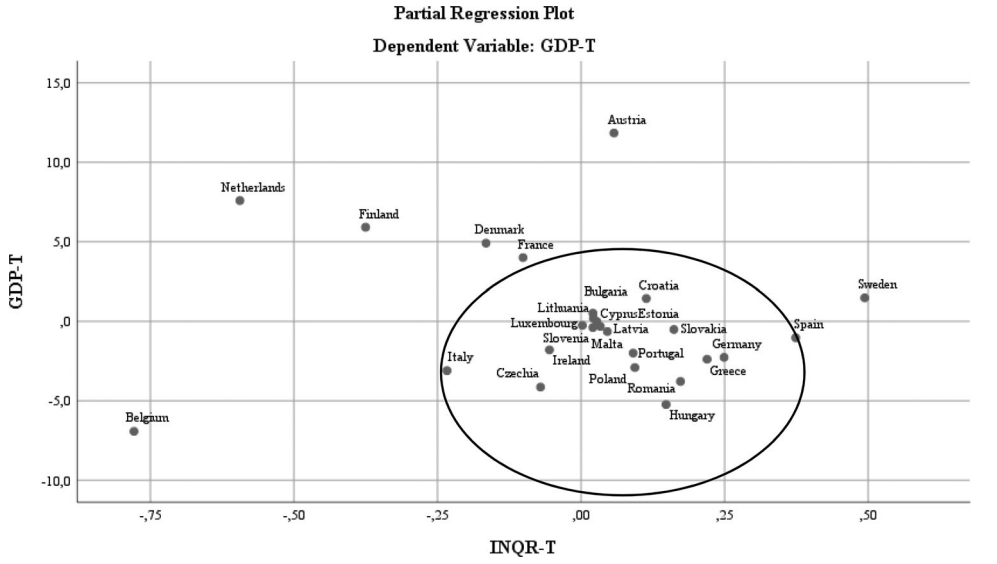


Figure 15. The main cluster in the case of the tourism reduction due to rising unemployment.
Source: made by the authors.

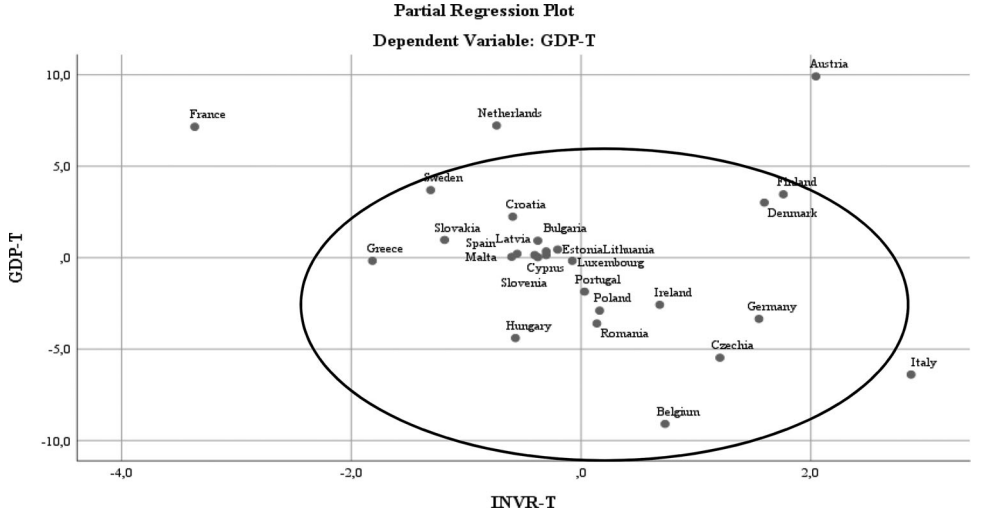


Figure 16. The main cluster in the case of the tourism reduction due to decrease of the investments.
Source: made by the authors.

The partial distribution chart reflects the fact that most Member States experienced an unemployment increase during the pandemic, with the exception of Finland, Denmark, France, the Netherlands and Belgium.

These states have specific features (aging population, large number of asylum seekers who returned to their countries of origin during the pandemic, active social protection, etc.). These aspects are suggestively presented in Figure 15.

The decrease of the investments has a significant effect on the tourism in most Member States, being outlined a core of evolution and exceptions (France, Netherland, Austria and Italy), (see Figure 16).

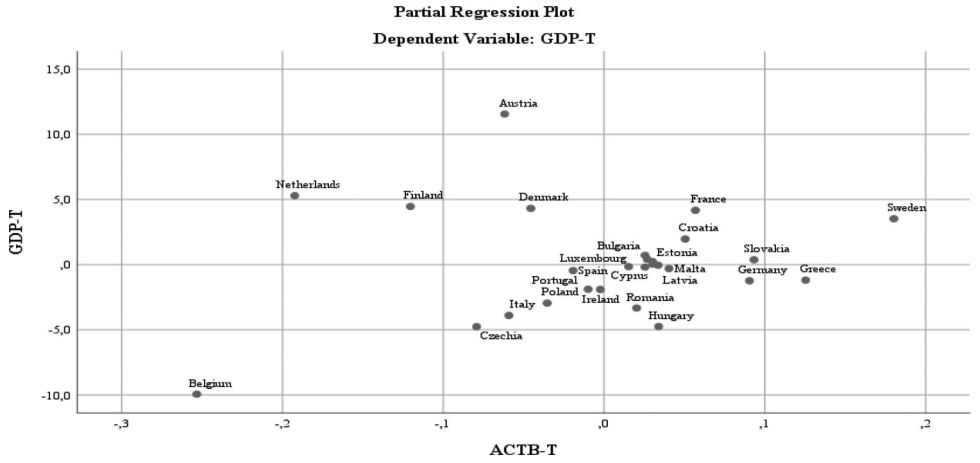


Figure 17. The main cluster in the case of the tourism reduction due to the bankruptcies.
Source: made by the authors.

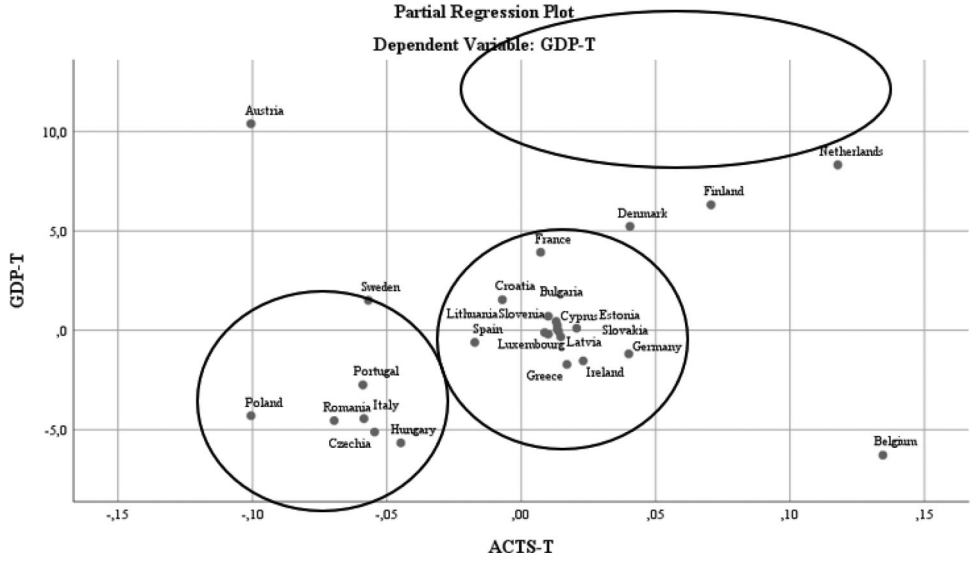


Figure 18. The main cluster in the case of the tourism reduction due to the customer dissatisfaction.
Source: made by the authors.

The bankruptcy affects the developed countries such as France and the Netherlands, which have absolute maximum values of economic downturn due to bankruptcies, but also countries such as Austria, Denmark, Sweden, Finland which traditionally had a well-developed tourism sector and which suffered from the pandemic due to the segment of operators' bankruptcy.

The rest of the Member States are less affected by the reduction of the economic capacities of the tour operators through bankruptcy (see Figure 17).

In terms of satisfaction, the partial correlation of regression reveals a polarized distribution for the EU countries, regardless of their tourism traditions.

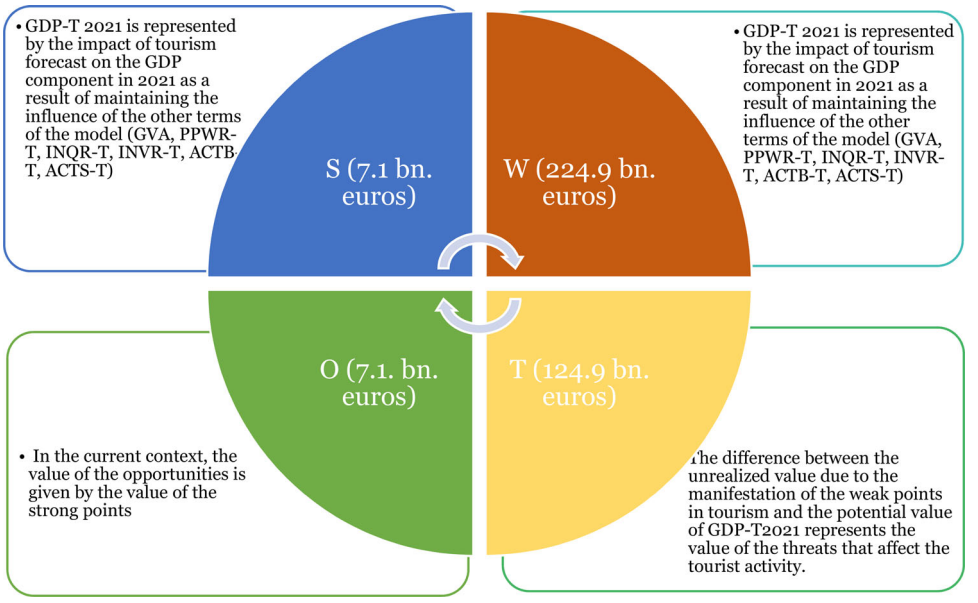


Figure 19. SWOT diagram regarding the damage to the tourism economy during the pandemic.
Source: made by the authors.

However, the impact of creating customer dissatisfaction has the greatest effect through the Pearson correlation on the dependent variable (over 90%), (see Figure 18).

The demonstration of the causal relationship between the model factors, respectively between the dependent variable (GDP-T) and the regression variables (GVA, PPWR-T, INQR-T, INVR-T, ACTB-T, ACTS-T), allows the calculation of a SWOT diagram for the management evaluation of the industry with the highlighting of the following calculation relation (see Figure 19).

The SWOT diagram mathematically quantified on the basis of the proposed model the intensity for each Member State of strengths, weaknesses, opportunities and threats. Based on it we created the matrix shown in Figure 19, which through community integration assesses opportunities and risks based on the evaluation of strengths and weaknesses. It is a very important element in the scientific approach as it profiles the branch at European level.

In order to calculate the data series presented in Figure 19, the macroeconomic forecasts were used, evaluating tourism in the terms and conditions manifested in 2020 and projected for 2021, based on the estimated GDP change rates communicated by Eurotat. Based on these data series, the model for the significance of trend curves evaluating was defined by statistically designing the dynamics of the dependent variables (W, T) in relation to the regressive variable (S), in a linear, cubic, exponential and growth manner. This procedure aims to highlight the impact of the application of the good practices and the sustainable management in tourism affected by the pandemic and to assess the statistical significance of the application of good practices during this period. The observational study was done on all Member States ($n = 27$).

Table 6. The results of the regression methods' implementation.

Model Summary and Parameter Estimates
Dependent Variable: w

	Model Summary					Parameter Estimates			
Equation	R Square	F	df1	df2	Sig.	Constant	b1	b2	b3
Linear	.841	132.396	1	25	.000	1.303	27.090		
Cubic	.873	52.712	3	23	.000	2.613	−17.187	72.804	−24.934
Power[a]	.	.	.	.	.	.	.		
Growth	.526	27.756	1	25	.000	.258	2.512		

Source: made by the authors.

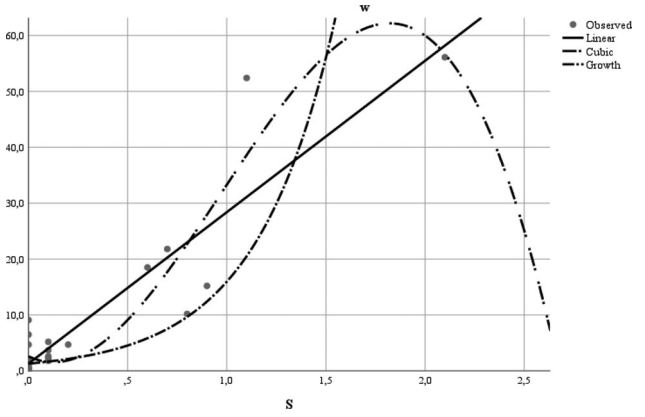


Figure 20. Regression modeling of S and W variables.
Source: made by the authors.

Following the application of statistical procedures, the results of none of the Member States were not excluded, but still it resulted that strengths exist at the level of at most 13 Member States. As a result, states such as Bulgaria, Cyprus, Denmark, Estonia, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Malta, Poland, Romania, Slovenia and Sweden were exempted. For these states, the disruptive factors do not allow for recovery as a result of the application of good practices or sustainable management for the immediate period.

In order to calculate the causal relationship with the reduction of the tourist economy as a result of the pandemic, the variables W, S were modeled by the four regression methods (linear, cubic, exponential and growth). The most significant results were obtained in the case of linear regression, in which the level of statistical significance is 84.1% and the Fischer coefficient calculated for a degree of freedom is maximum when the sigma conditions tends to 0. The regression equation of the linear model can be expressed by the form:

$$W = 27.09S + 1.303 \tag{3}$$

This aspect results from the Table 6.

The graphical representation of the lines reflects the fact that, in the case of linear distribution, the sum of the distances between the observed value and the predicted one of the dependent variable is the smallest. The linear model is the most

Table 7. The results of the cubic regression methods' implementation.

Model Summary and Parameter Estimates
Dependent Variable: t

	Model Summary					Parameter Estimates			
Equation	R Square	F	df1	df2	Sig.	Constant	b1	b2	b3
Linear	.764	80.741	1	25	.000	1.375	12.538		
Cubic	.917	84.419	3	23	.000	1.632	−12.907	51.967	−19.796
Power[a]	.	.	.	.	.	.	.		
Growth	.533	28.547	1	25	.000	-.013	2.191		

Source: made by the authors.

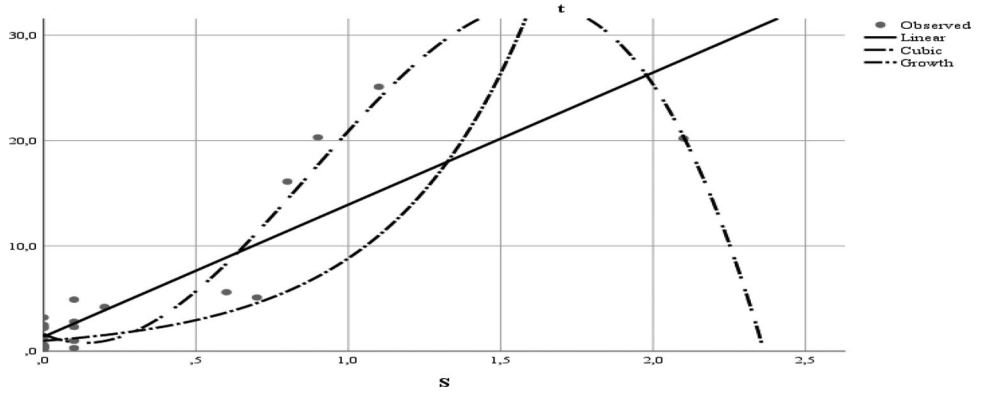


Figure 21. Regression modeling of T and S variables.
Source: made by the authors.

representative for the evaluation of the modification of the strong points and, implicitly of the opportunities, in relation to the vulnerabilities identified by the application of the best practices and of the sustainable management (see Figure 20).

In order to calculate the causal relationship with the reduction of the tourist activities as a result of the pandemic, the variables were modeled by the four regression methods (linear, cubic, exponential and growth): T, S. The most significant results were obtained in the case of cubic regression, in which the level of statistical significance is 91.7% and the Fischer coefficient calculated for a degree of freedom is maximum under the sigma conditions which tends to 0. The regression equation is:

$$T = -12.907S + 51.969S2 - 19.796S3 + 1.632 \quad (4)$$

This aspect results from the Table 7.

The graphical representation of the lines reflects the fact that in the case of the cubic distribution the sum of the distances between the observed value and the predicted one of the dependent variable is the smallest. The cubic model is the most representative for the evaluation of the strong points' modification and, implicitly of the opportunities, in relation to the vulnerabilities identified by the application of the best practices and of the sustainable management. The proportionality relationship

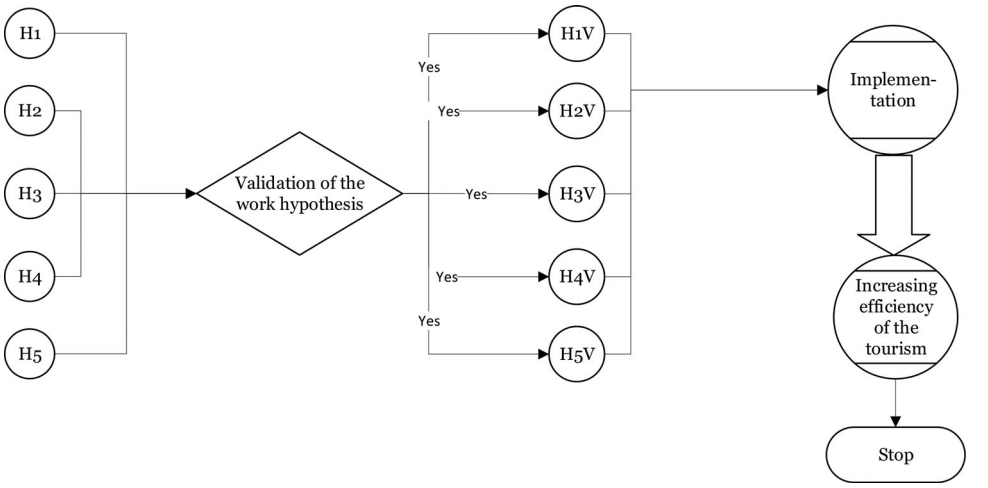


Figure 22. Algorithm for validating the research hypotheses.
Source: made by the authors.

between the dependent variable (T) and the regressor variable (S) is an inverse one, according to the calculated coefficients of the function (see Figure 21).

According to the results obtained from this study, we found an immediate damage to the tourism economy during the pandemic. It will continue its effects in 2021, the year in which the size of the economic damage was assessed by the SWOT diagram at 224.9 bn. Euro, and the size of the potential threat from external causes was estimated at 124.9 bn. Euro for the EU. This demonstrates the hypothesis H1, namely: The evolving health crisis manifests its effects in 2021.

The process of validating research hypotheses follows the algorithm in Figure 22.

Considering the variables of the economic model (GVA, PPWR-T, INQR-T, INVR-T, ACTB-T, ACTS-T) which are in direct dependence with the damage to the tourism economy during the pandemic, H2 is demonstrated, namely: A viable economic recovery can begin at the end of the health crisis. At the same time, we also consider Objective 2: Identify trends in the main European national tourism indicators to have been met.

The building of the application model of good practices and sustainable management in tourism based on the forecast of the variables (S, W, T) in relation to the GDP growth forecast (communicated by Eurotat) and the results obtained by piloting the respective model (high statistical significance) confirms H3, namely: The tourism experiences a recovery slope at most equal to that of the national economy's recovery on short term. This approach validates Objective 3: Assessing trends and forecasting turning points for economic recovery in tourism.

The hypothesis H4 is in line with the results of the SWOT model of good management practices in sustainable tourism, a model that is based on taking advantage of opportunities and strengths during the period with health damage. The sustainable management is enhanced in the conditions in which the service supply is placed in a safe area (city/town/region). The SWOT approach supports the validation of Objective 4: Configuring the Swot diagram as an operational analysis tool and Objective 5: Designing, testing and implementing an econometric model on the basis of which policy changes in European tourism can be made.

According to the SWOT model (H5), it results that the economic recovery of tourism will support the macroeconomic recovery in each Meneber State: The tourism recovery definitely contributes to the economic recovery.

5. Conclusions

This research showed that there are a number of factors that affected the tourism economy during the health crisis, the factor with maximum impact being the increasing of the consumers of tourism services' dissatisfaction due to the quarantine, limiting the right of transit or conditioning the health tests. As a result of these aspects, a significant reduction of the tourism economy was observed across all Member States and the limitation of the opportunities on the immediate time horizon for the states with this less developed industry.

The SWOT analysis and the table of the optimal one proposed for recovery reveal the margin of the action and the immediate opportunities, the authors thus realizing a flow of activities (Table 1) that will allow at least a partial recovery of the tourism economy on short term.

The working hypotheses have been demonstrated and confirm the fact that, in the industry, the economic crisis will be maintained during the health crisis. There are some outlets especially on the background of the increase of the consumers of tourist services' satisfaction.

The SMMT model proposed by us is an innovative one because it quantifies the impact of endogenous and exogenous factors that have modified the tourist supply and affected the demand for services during the period after the pandemic outbreak.

The model is totally new. It succeds to point out combined aspects regarding endogenous and exogenous factors connected to tourism and to create the profile of the tourism using Swot analysis at national and communitary level in order to identify the measures used for the industry recovery.

The model can be successfully applied by the tourism decision-makers at European level and not only in order to limit the negative economic effects on the industry during the current period affected by the health crisis.

The limits of the study lie in the relatively limited period of observation (objectively delimited by the start of the pandemic) and by the limited number of factors taken into account.

The authors aim to expand their research on other factors in the future.

Disclosure statement

No potential conflict of interest was reported by the authors.

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