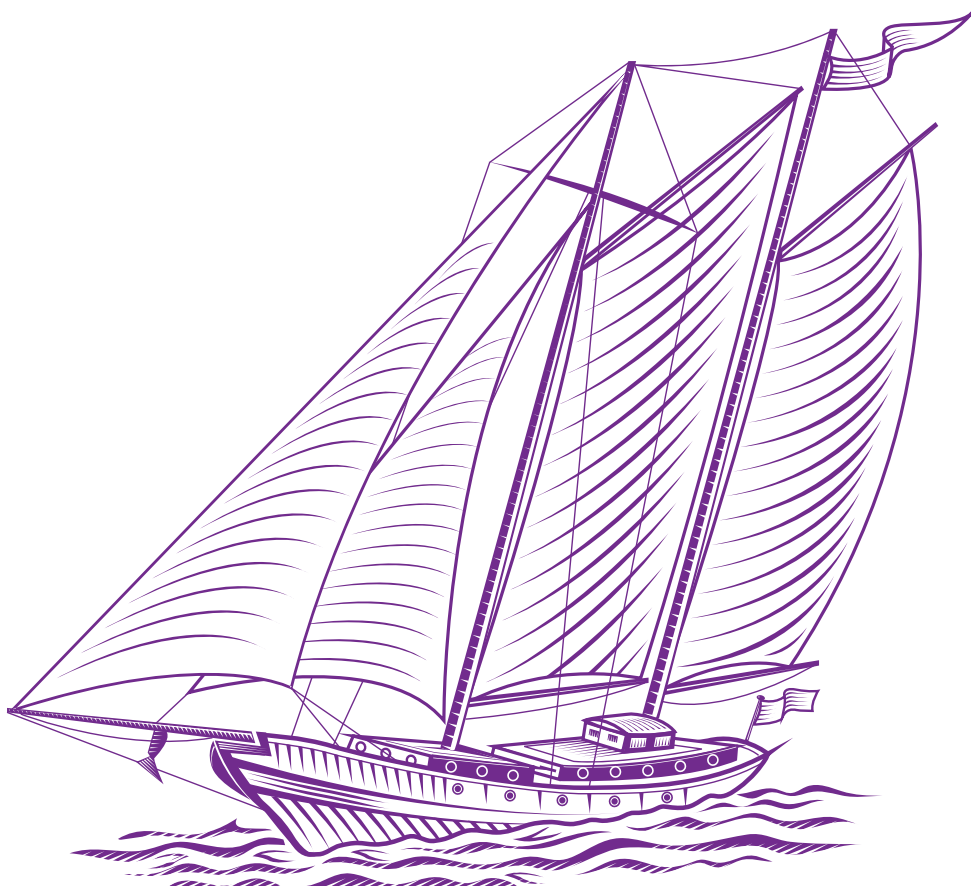




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STUDIA UBB EDITORIAL OFFICE: B.P. Hasdeu no. 51, 400371 Cluj-Napoca, Romania,
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THE IMPACT OF COVID-19 ON CULINARY BUSINESSES: A REVIEW

ROSELYNE OKECH¹

ABSTRACT. Culinary tourism also referred to as food tourism or gastronomy tourism, is engaged in by individuals who seek out culinary experiences to broaden their understanding of food culture or lifestyle while travelling. Tourism is very lucrative to local, state and national economies. Over the past decade, tourists have transitioned to seeking cultural experiences, where individuals immerse themselves in the cuisine and lifestyle of a culture, from street food to gourmet and fine dining. According to World Food Travel Association (WFTA), 80% of travellers research food and drink options while travelling to a new destination. Moreover, the organization states that 53% of these travellers consider themselves “culinary travellers.” With the COVID-19 pandemic limiting international travel, the impact has been greatly felt across all industries. The use of technology has been widespread during this time. During the height of lock-downs, with some of our favourite restaurants and food services unavailable, many people turned to social media to learn how to make their favourite dishes at home. So, from virtual cooking shows and tutorials, to live tastings and remote social eating have all been used to keep people engaged and interactive temporarily replacing the traditional experience. In support of the United Nations World Tourism Organization’s #TravelTomorrow campaign, chefs from around the world, including UNWTO Ambassadors for gastronomy tourism, shared their local recipes, giving audience a taste of what to expect when people start to travel again, and highlighting the unique potential of culinary. This paper using integrative literature review will highlight some of the impacts and challenges that food business especially small and medium establishments faced as a result of this pandemic. Caring about local food businesses and markets can help preserve our culinary roots. The recovery plan might be slow, but the tourism industry has always been resilient, it will survive.

¹ Professor, PhD, Memorial University (Grenfell Campus), NL, Canada,
e-mail: rokech@grenfell.mun.ca

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Introduction: Tourism Overview

Tourism is one of the world's major economic sectors. In 2019 it accounted for 1, 460 million total international tourism arrivals and 1, 481 billion in total international tourism receipt. It is the third largest export category after fuels and chemicals accounting for 7% of global trade. Tourism is a key component of export diversification both for emerging and advanced economies, with a strong capacity to reduce trade deficits and to compensate for weaker export revenues from other goods and services. According to UNWTO total exports from tourism reached USD 1.7 Trillion in 2019. Export earnings from international tourism (travel and passenger transport) are an important source of foreign revenues for many destinations around the world, helping to create jobs, promote entrepreneurship and develop local economies. For many small developing countries, including most Small Island Developing States, tourism is a major source of foreign-currency income, which can represent up to 90% of total exports (UNWTO, 2021). In tourism, activities related to food have been called by several names, such as food tourism, culinary tourism, and gastronomy tourism. However, there are many types of tourism activities that tourists engage in among them is food related which refers to where tourists travel to a certain destination for the purpose of eating local foods. Visitors may not only learn about local foods, but also about the way of life, culture, and history of the locals.

Food tourism draws broader attention and emerges as a major research frontier in the field of hospitality and tourism (Ellis et al., 2018). The World Food Tourism Association (2020) classifies the historical

evolution of food tourism into three phases (2001–2011, 2012–2018, and 2018–present). In the first phase (2001–2011) food tourism was understood as the pursuit and enjoyment of unique and memorable food and drink experiences, while in its second stage (2012–2018), food tourism started to grow in parallel with mainstream tourism promoted by social media and television cooking shows. In the third stage (2018–present), food tourism started to be recognized as a composite industry comprising the full range of experiences including cooking classes and visiting farmlands (World Food Travel Association, 2020). As a result, currently, food becomes one of the main motivations of tourists in choosing their holiday destinations (Wondirad et al., 2021; Rita et al., 2019; World Food Travel Association, 2020).

While some destinations have traditionally benefited from the positive image of their food, other destinations such as Canada, Australia and South Africa have actively sought to promote and highlight their food and wine as part of their destination image. Norway, Singapore, New Zealand and Scotland each use food as a marker of identity to promote tourism and exports. Similarly, destinations like Scotland and Portugal, not necessarily known for their food, began to use their gastronomy as part of the tourism experience and destination marketing (Quigley et al., 2019). Dining out is very common among tourists and food is often considered an important part of exploration among tourists. The global culinary tourism market was valued at \$1,116.7 billion in 2019 and is expected a market value of \$1,796.5 billion by 2027, registering a CAGR (compound annual growth rate) of 16.8% from 2020 to 2027 (Research and Markets, 2020). The growth of culinary tourism is driven by increase in government initiatives to promote tourism. Moreover, rise in affinity of people toward foreign dishes such as Sushi, various forms of prepared meat, snacks and more among others promotes the culinary tourism market growth. However, risk involved in travelling can be a major challenge to the tourism industry in general, which also affects the culinary tourism market. On the contrary, an increase in social media trend of eating out in foreign lands has piqued the interest of tourists all around and has opened avenues for growth for the culinary tourism market.

Research Methodology

This paper uses an integrative review process. The purpose of using an integrative review is to assess, critique and synthesis culinary tourism information available in the light of the COVID pandemic. Snyder (2019), argues that most integrative literature reviews are intended to address mature topics or new, emerging topics. In the case of mature topics, the purpose of using an integrative review method is to overview the knowledge base, to critically review and potentially re-conceptualize, and to expand on the theoretical foundation of the specific topic as it develops. For newly emerging topics, the purpose is rather to create initial or preliminary conceptualizations and theoretical models, rather than review old models.

The Importance of Culinary Tourism

The phenomenon of culinary tourism was known many centuries ago when merchants made trips to foreign countries to purchase a variety of spices, wines and different beverages (Diaconescu, 2016). Culinary tourism refers to trips in which local cuisine (food) plays an important role. The World Food Travel Association (WFTA) defines culinary tourism as: the pursuit and enjoyment of unique and memorable food and drink experiences. For most tourist destinations, gastronomy plays a strategic role in their image and brand. Most culinary tourists are interested in local food culture, rather than gourmet. This relates culinary tourism to cultural and adventure tourism. According to data of the International Association of Culinary Tourism, those who prefer that kind of tours does not waive various events of cultural activities – visits to various festivals as well as museums and theatres. That is why travel companies quite often form special tours with taking into account both factors – culture and culinary (Diaconescu, 2016). Local cuisine gives travellers a direct and authentic connection with their destination. They experience local heritage, culture and people through food and drink. Food businesses include restaurants (family-style, family-owned; gourmet; international);

food kiosk; food trucks and home made foods. Culinary activities can range from tasting local food and drink to more adventurous and active experiences. They include:

- cooking with locals
- cooking workshops
- eating at locals' homes, at local restaurants, or street food
- food and drink tasting sessions of cheeses, wines, beers, spirits etc.
- food and drink tours and trails
- collecting ingredients or participating in the local harvest
- visiting farms, orchards, wineries, distilleries, food markets, fairs or festivals

Tourists spend over a third of their holiday budget on food and drink – even up to 50%, when food is the main travel purpose! Food tourism has become a blossoming field of academic study since the late 1990s (Leer, 2020; Long, 2004). The first studies focused on various forms and definitions of food-related tourism from gourmet tourism to wine tourism (Hall et al., 2009) and food-related agricultural tourism (Slocum and Curtis 2017; Everett, 2016). Definitions are tricky as all tourists eat, so at which point does tourism qualify as food tourism? Hall and Mitchell define it as 'visitation to primary and secondary food producers, food festivals, restaurants and specific locations for which food tasting and/or experiencing the attributes of (a) specialist food production region are the primary motivating factor for travel' (Hall & Mitchell 2001: 308).

This seems a rather solid and broad definition, expanding the concept to much more than restaurant visits. In their review of the food tourism literature, Ellis et al., (2018) end up with a distinct description of the term: 'it could be argued that food tourism is about cultural anthropology through understanding the interactions of tourists with place through the medium of food' (Ellis et al., 2018: 261). In this perspective, food is not so much a thing in itself for the tourist, but a gateway to experiences of authenticity, interpersonal contact and other cultural aspects which might be found in other kinds of cultural tourism. Food is understood more as a medium for cultural understanding rather than a topic to explore in itself. This understanding might be too

simplified as we also see really nerdy forms of food tourism where the materiality and the quality of the food is very important, for instance, in exclusive craft beer festivals (Ikäheimo, 2020; Leer, 2020).

The Role of UNESCO World Heritage on Traditional Cuisines

Since 2010, UNESCO has accepted local food culture as Intangible Cultural World Heritage. This kind of status can give tourism destinations a competitive advantage. They can build their image as a culinary tourism destination around it. The following list includes items inscribed by December 2020.

- **Traditional Mexican Cuisine – Mexico (2010):** This cuisine is a comprehensive cultural model comprising farming, ritual practices, age-old skills, culinary techniques and ancestral community customs and manners. It is made possible by collective participation in the entire traditional food chain: from planting and harvesting to cooking and eating. The basis of the system is founded on corn, beans and chili; unique farming methods such as milpas (rotating swidden fields of corn and other crops) and chinampas (man-made farming islets in lake areas); cooking processes such as nixtamalization (lime-hulling maize, which increases its nutritional value); and singular utensils including grinding stones and stone mortars.

- **Ceremonial Keşkek – Turkey (2011):** Made with meat or chicken, keşkek is a stew found in Turkish, Iranian and Greek cuisines. The dish is usually associated with a ceremonial or religious occasion and is cooked by groups of men and women together in the community.

- **Washoku – Japan (2013):** Washoku is a social practice based on a set of skills, knowledge, practice and traditions related to the production, processing, preparation and consumption of food. It is associated with an essential spirit of respect for nature that is closely related to the sustainable use of natural resources. The basic knowledge and the social and cultural characteristics associated with Washoku are typically seen during New Year celebrations. The Japanese make various preparations to welcome the deities of the incoming year, pounding rice cakes and preparing special meals and beautifully decorated dishes using fresh ingredients, each of which has a symbolic meaning.

- Mediterranean Diet – Cyprus, Croatia, Spain, Greece, Italy, Morocco and Portugal (2013): The Mediterranean diet involves a set of skills, knowledge, rituals, symbols and traditions concerning crops, harvesting, fishing, animal husbandry, conservation, processing, cooking, and particularly the sharing and consumption of food. Eating together is the foundation of the cultural identity and continuity of communities throughout the Mediterranean basin.

- Qvevri Wine Making – Georgia (2013): Qvevri wine-making is practised throughout Georgia, particularly in village communities where unique varieties of grapes are grown. The Qvevri is an egg-shaped earthenware vessel used for making, aging and storing the wine. Knowledge and experience of Qvevri manufacture and wine-making are passed down by families, neighbours, friends and relatives, all of whom join in communal harvesting and wine-making activities.

- Kimjang - South Korea (2013): Anyone who has ever tried Korean food has also sampled the famous pickled side dish called kimchi. Basically, kimchi is some type of vegetable—most frequently napa cabbage—that has been fermented in a spicy red paste that may include red chili powder, garlic, ginger, salt, sugar, fish sauce and green onions.

- Turkish Coffee – Turkey (2013): Turkish coffee combines special preparation and brewing techniques with a rich communal traditional culture. The freshly roasted beans are ground to a fine powder; then the ground coffee, cold water and sugar are added to a coffee pot and brewed slowly on a stove to produce the desired foam. The beverage is served in small cups, accompanied by a glass of water, and is mainly drunk in coffee-houses where people meet to converse, share news and read books.

- Lavash – Armenia (2014): Lavash is a traditional thin bread that forms an integral part of Armenian cuisine. Its preparation is typically undertaken by a small group of women, and requires great effort, coordination, experience and special skills. A simple dough made of wheat flour and water is kneaded and formed into balls, which are then rolled into thin layers and stretched over a special oval cushion that is then slapped against the wall of a traditional conical clay oven. Lavash is commonly served rolled around local cheeses, greens or meats, and can be preserved for up to six months. It plays a ritual role in weddings, where it is placed on the shoulders of newlyweds to bring fertility and prosperity.

- Kimchi - North Korea (2015): Kimchi is the Korean name for preserved vegetables seasoned with spices and fermented seafood. It's an important tradition on the Korean peninsula, where the recipe has been transmitted from mother to daughter for centuries.

- Beer Culture – Belgium (2016): Beer is big in Belgium and has been brewed in the country for centuries. Containing water, barley, hops and yeast, beer was originally made by monks and nuns in the Middle Ages as a replacement for water. (Drinking water was often unclean and made people ill, so a brew of weak beer was preferable—even for children).

- Palov Culture and Tradition – Uzbekistan (2016): There is a saying in Uzbekistan that guests can only leave their host's house after palov has been offered. Palov is a traditional dish made and shared throughout rural and urban communities of Uzbekistan. It is prepared with ingredients such as rice, meat, spices and vegetables and in addition to be enjoyed as a regular meal, is served as a gesture of hospitality, to celebrate special occasions like weddings and new year, to help those in need who are underprivileged, or to honour loved ones who have passed away. Palov may also feature at events alongside other rituals taking place such as prayer and performances of traditional music.

- Oshi Palav (pilaf) – Tajikistan, Azerbaijan, Iran (Islamic Republic of), Kazakhstan, Kyrgyzstan and Turkey (2016): is a traditional dish of communities in Tajikistan recognized as a part of their cultural heritage. Otherwise known as the 'King of meals', it is based on a recipe using vegetables, rice, meat and spices but up to 200 varieties of the dish exist. Considered an inclusive practice that aims to bring people of different backgrounds together, oshi palav is prepared to be enjoyed at regular mealtimes, as well as social gatherings, celebrations and rituals.

- Nsima – Malawi (2017): is a form of thick porridge prepared with maize flour. Nsima is prepared through an elaborate process requiring specific knowledge, from pounding the maize into flour to selecting the accompanying food and then preparing and serving it. It goes by different names in other African countries. *Ugali* in East Africa, *pap* in south Africa and *fufu* in west Africa.

- Dolma – Azerbaijan (2017): Dolma tradition is a set of knowledge and skills relating to the preparation of the traditional meal 'dolma', which takes the form of small fillings (containing meat, onion, rice, peas and spices) wrapped in fresh or pre-cooked leaves or stuffed in fruits and

vegetables. The name of the tradition originates from the shortened Turkish word 'doldurma', meaning 'stuffed'. The meal is shared within families or local communities.

- Neapolitan Pizzaiuolo – Italy (2017): This is a culinary practice comprising four different phases relating to the preparation of the dough and its baking in a wood-fired oven, involving a rotatory movement by the baker. The element originates in Naples, the capital of the Campania Region, where about 3,000 Pizzaiuoli now live and perform. Pizzaiuoli are a living link for the communities concerned.

- Hawker Food Culture – Singapore (2020): Hawkers prepare a variety of food ('hawker food') for people who dine and mingle at hawker centres. These centres serve as 'community dining rooms' where people from diverse backgrounds gather and share the experience of dining over breakfast, lunch and dinner. Activities such as chess-playing, busking and art-jamming also take place.

- Couscous - Algeria, Mauritania, Morocco & Tunisia (2020): Couscous is a cereal, thus the process starts with a seed. Couscous is one of the most well-known dishes from North African cuisine. Each community has developed its own specific ways of preparing couscous, and each family takes pride in its own unique recipe. Couscous is made from semolina, which is a basic and cheap staple, and yet the dish holds much prominence, while its preparation requires complex steps and a certain level of skill.

- Il-Ftira – Malta (2020): is a flattened sourdough bread that's traditional to the island nation of Malta. It differs from the other flat breads listed by UNESCO and mentioned on this list – it's more like a loaf with a thick crust and a light, fluffy inside. The name ftira comes from the Arabic word for unleavened bread and the dish reflects the cultural exchange that has defined Malta's history. This bread is hand-shaped – the process can't be replicated by a machine – which makes it all the more special.

Impacts of Culinary Tourism

Sociocultural – street foods

Previous research has confirmed that food and dining are major elements considered by tourists when travelling and choosing destinations (Jeaheng & Han, 2020; Choe & Kim, 2018). Tourists eat the local cuisine in a

tourism destination to fulfill their travel experiences (Vesci & Botti, 2019). Travellers acquire new knowledge and understanding of the traditional local and regional culture of a destination, which are valuable in relation to destination image and future tourist intention (Jeaheng & Han, 2020; Ellis et al., 2018; Kuhzady et al., 2020). Accordingly, several tourism destinations have emphasized food activities and created gastronomic/culinary experiences to attract international visitors. Street foods combine the authentic culture of the local people and the traditional values by using local resources, contributing to local economies and maintaining a sustainable tourism system. Street foods experience challenges and opportunities to increase the long-term sustainability at tourist destinations. Moreover, street foods have been used as a tourism tool in many destinations and are even regulated in some Asian countries, such as Thailand, Taiwan, Singapore, Korea, Hong Kong, and Vietnam. In Southeast Asia, street foods have become an essential part of the tourism and hospitality industries because a tourist attraction represents the local culture and the way of life of local people. Given the aforementioned reasons, several destinations are focusing on street foods as an upcoming tourism product. In the past, scholars have indicated that food (Jeaheng & Han 2020; Tsai & Wang, 2017) and street food are the core of tourists' motivation and the main component of tourists' decision-making processes to travelling.

Economic

Culinary tourism stimulates local food production both in terms of quality and quantity which makes positive contributions to local economic development. As a vehicle to fuel the creation of new tourism products, culinary tourism encourages innovation and stimulates local entrepreneurship (Wondirad et al., 2021; Suntikul, 2019). Since culinary tourism encourages visitors to spend a longer period of time in the place of visit, destinations significantly benefit from its multiplier effect due to increased transactions between hosts and guests. In a nutshell, the concept of multiplier effect in tourism assumes that all segments within destinations' economy are interconnected leading to more transactions and financial circulations and thereby maximized outputs. Increased demand for a product in tourism as a result of improved destination image also positively impacts the national economy in terms of production, income, and employment (Wondirad et al., 2021). The concept of tourism

multiplier refers to a circulation of tourism revenue within destinations' overall economy (Mathouraparsad & Maurin, 2017). As a form of niche tourism, culinary tourism stimulates travel to tourist destinations which, in turn, emboldens other economic and social sectors. As explored by Rita et al. (2019), tasting local food and sightseeing are the most attractive destination activities among the US and the UK millennials. Moreover, a study conducted by World Food Travel Association in (2019) suggested that food was more important for 59% of leisure travellers during their holiday. Given the current international travel and tourism market is significantly patronized and will continue to be patronized by millennials and post-millennials (Business Insider, 2019; Wondirad et al., 2021), it is worthy to note that food tourism will remain to be one of the top tourist attractions in the future (World Food Travel Association, 2020).

In light of that, in the current global tourism market, there is a steady increase in the number of food tour companies, food and beverage focused events, and food and beverage focused marketing efforts (World Food Travel Association, 2020). Whenever tourist service providing institutions create a linkage between the culinary sector and destinations' attractions, the overall impacts of tourism in the area improve significantly. This is in part because food tourism facilitates inter sectoral linkage and thereby creates synergy in the entire economy (Wondirad et al., 2021).

Environmental – meal deliveries

In recent years' demand for locally grown food products has increased substantially as a possible alternative to the long supply-chain production models of the industrialized global food system. As such, local food has become a component of the development of sustainable culinary systems within tourism and hospitality, particularly in rural areas (Roy & Ballantine, 2020). However, the growing interest in local foods has been explored largely from the consumer's perspective and the role of farmer's markets (Crawford et al., 2018) rather than other elements in the sustainable culinary system and supply chain such as restaurants and food wholesalers. Studies in consumer's perspective have shown that local products are perceived as being characterized by a wide range of benefits such as environmental sustainability and new market opportunities, economic benefits, social benefits, animal welfare (Vigors, 2018), food quality, food safety (Baudry et al., 2017), and personal health (Roy & Ballantine, 2020).

Other studies have also suggested that local food products are commonly perceived as more natural, fresher, healthier, and safer than globalized food products. All these aspects lead consumers to pay a price premium for local food products (Merritt et al., 2018), including at restaurants.

More recently, sustainability has become a central issue in food tourism research and in public/political discourses on the matter. As mentioned above, it could be argued that the concept of sustainable food tourism – like sustainable tourism in general – is a contradiction in terms. As argued by Hall & Goessling (2016), there seems to be a contradiction between mobility and sustainability inherent in the very idea of sustainable tourism. While there is an argument for the right to travel, we should also consider the consequences of this right and how it relates to sustainability. It is not sustainable for a foodie from Melbourne to fly to Copenhagen and eat at Amass, one of the most sustainable restaurants in the world (Leer, 2020). So, rather than arguing that food tourism can be sustainable, the talk should be about undertaking food tourism more sustainably. And even talk about how food tourism might inspire sustainable practices and activism after the journey: food tourism as a form of education in sustainability. Also, it should be noted that there are various definitions and understanding of sustainability in relation to tourism. Some solely focus on the carbon footprint while others also include ideas of social, cultural and economic sustainability. So, food tourism can also benefit regional development (Hall & Goessling 2016). Various countries have applied a broad political focus to see food tourism as a way to sustain new economies, social networks and cultural initiatives in rural areas with increased depopulation due to urbanization, centralization and the disruption of traditional agriculture and industry in these areas (Slocum & Curtis 2017).

Impact of COVID-19

Food delivery has already made a major impact on the restaurant industry. Before COVID-19, the on-demand economy sparked by Uber, Netflix, and Amazon Prime had already started its spread to the restaurant industry. Consumers wanted convenience in all aspects of their lives, including food. In the new post-COVID world, that demand for food

convenience has increased – both by necessity (i.e. shelter-in-place orders) and because so many brands are jumping on the food delivery service bandwagon. To make this service available to customers, restaurants are either relying on third-party delivery providers or creating their own with an online ordering impact system. As more and more dining rooms are allowed to reopen across North America, it's likely that the demand for delivery will be affected. But by how much? How many people will still prefer to order takeout and get it delivered versus dining in? Does that mean offering a delivery service is still worth the investment of time and resources? In fact, it's even inspired a whole new category of restaurant: ghost restaurants. Ghost restaurants are restaurants that only offer food via delivery. Unlike traditional restaurants, they don't have brick-and-mortar locations where you can dine-in or sometimes even pick up. They typically run out of commercial kitchens, so the focus is on food preparation and order fulfillment, rather than an experience. Since most dining rooms have been forced to close at some point in the past few months, ghost restaurants have really had their time to shine, helping diners get their favorite dishes safely and lowering operational costs for restaurant owners (McCann, n.d.)

Technological – social media, partnership

There are many studies on the important role ICT plays in an economy (Evans, 2018a; Evans, 2018b; Wang, 1999). While studies such as Bethapudi (2013) have argued that ICT plays a major role in tourism development and has become an inevitable contributor to tourism industry expansion, most analyses in the literature have largely ignored the important link between ICT and tourism (Adeola & Evans, 2020). Though some of this restaurant tech has been around for years, the industry has been slow to fully embrace digital innovations. Now, COVID-19 has radically changed consumer behaviour and restaurants have no choice but to adopt technology that improves safety and economic viability (Pendril, n.d.) Now, more than ever, restaurants are leaning into online ordering as a way to streamline takeout and delivery and keep their businesses afloat. Due to the COVID-19 crises, some restaurants and food establishments have been forced to rely on third party apps such as Caviar, Postmates, Grubhub, Uber Eats and DoorDash among others to bring in orders. For the small and medium businesses including street foods,

mom-pop diners and food trucks, the pandemic poses several challenges if they have to adopt to the current technological trend. These include staff who have to be reliable and trustworthy; technology to be able to receive, fulfill and deliver orders; labour costs and packaging options. One of the impacts of COVID-19 is the resurgence of families starting to cook and eat together. This has been facilitated by various live and taped cooking shows. It has forced people to look into healthier eating styles. Shop for groceries when necessary and experiment both adventurously and pragmatically with family. Perhaps, just perhaps cooking more at home could become the new post pandemic normal.

Future of Culinary Experiences

The food-service and hospitality industry has always been characterized by advances that keep in step with—and are often ahead of—customer demands and the over-arching needs of a changing world. With environmental issues looming and the global population rising, it's more critical than ever for the food world to bring new ideas and innovations to the table. What food professionals will do about it in the next decade and beyond has become vitally important. So what does the future of food look like? According to the Culinary Institute of America (www.ciachef.edu):

- There will be more pop-up restaurants and food trucks than ever on the culinary landscape.
- Speaking of “pop-up,” kiosks are already popping up as the main tool for ordering in popular restaurants. On-screen ordering is a trend that will likely continue to evolve with the technology.
- Techie events have showcased automated robot kitchens. Many future kitchens will feature smaller, more efficient equipment; high-speed ovens; and water baths.
- Keep that smartphone or watch close by; it's likely going to completely replace credit cards as your method of payment.
- Smart tables will display your menu and allow you to swipe the surface of the table to browse, order, and even pay for your meal.
- Restaurants will take advantage of emerging technologies to be even more eco-friendly, creating new ways to recycle or compost all waste.

The menus will be a lot easier to track nutritional value, so offering healthful, flavorful choices will be more essential than ever. Menus will be nonlinear, more personal and more up to date. Product costs change on a near-daily basis, and digital menus make it easier for restaurants to adjust their prices and selections in real time. With internet and media advances making the world an increasingly “smaller” place, menus will trend toward more specific cuisine-focused themes (www.ciachef.edu). Another factor that will be relevant to dining intentions is brand trust, which refers to customers’ perceived values and reliance on a particular brand (Wei et al., 2021). Customers have more trust in restaurants that are reliable and exhibit some concerns for their health and safety. Thus, restaurants that have implemented efficient preventive measures during the pandemic may receive a higher level of customer trust. Starr (2020) indicated that some customers were appreciative of restaurants that had strict preventive measures and were willing to pay more, which resulted in a long-term benefit to the brand trust (Wei et al., 2021). In addition, to alleviate tourists’ concerns, vendors and entrepreneurs who want to establish street foods, will want to improve their safety and hygiene of food production by considering its quality to build tourist trust and belief toward street foods. Enhancing the image of street foods as a food destination will create a competitive advantage. These issues challenge the government and food businesses to work closely together in improving food tourism strategies/policies and good practices to increase its demand. By doing so, tourist intention will be boosted, and the positive image of a destination as one of the best places for food tourism will be improved (Jeaheng & Wan, 2020).

Conclusions

Food and tourism will continue to play a significant part in the overall global economy. Food is usually the key to many cultures and social settings and to a larger degree a global intangible heritage which can be used to attract tourists. There is a strong connection and interplay between food and tourism which can drive an economy as well as cultural development. Experiences in diverse food products can help

brand and market destinations in addition to promotion of local artifacts and other traditional products. When destinations promote food as a product, it can help support the necessary infrastructure for overall production, consumption and delivery. It provides for entrepreneurship and employment opportunities which is normally a major goal for many communities. How food is produced, transported and consumed from a sustainable standpoint will be paramount. Farm to table or farm to fork concepts are gaining momentum. This paper has highlighted the importance and the impact of culinary tourism despite the challenges of the pandemic. The future of culinary tourism is definitely changing given the technological aspects of that are evolving. The pandemic has certainly provided opportunities and provoked many businesses to think out of the box and do things differently. Meal kits companies and delivery apps are beneficiaries of the developing consumer behaviour. Whatever happens, food will always remain at the core value of social and cultural bonding.

REFERENCES

- Baudry, J., All'es, B., P'eneau, S., Touvier, M., M'ejean, C., Hercberg, S., and Kesse-Guyot, E. (2017) Dietary intakes and diet quality according to levels of organic food consumption by French adults: Cross-sectional findings from the NutriNet-sant'e cohort study. *Public Health Nutrition*, 20(4), 638–648.
- Bethapudi, A. (2013) The role of ICT in tourism industry. *Journal of Applied Economics and Business* 1(4), 67–79.
- Business Insider. (2019) *Millennials are willing to spend \$5000 or more on vacation, making them the age group that spends the most on travel - but Gen Z isn't far behind*. Retrieved 24.03.21 from <https://www.businessinsider.com/millennials-spend-5000-on-vacation-age-group-spends-the-most-on-travel-but-gen-z-isnt-far-behind-2019-4>.
- Choe, J. Y. J. and Kim, S. S. (2018). Effects of tourists' local food consumption value on attitude, food destination image, and behavioral intention. *International Journal of Hospitality Management*, 71, 1–10.
- Crawford, B., Byun, R., Mitchell, E., Thompson, S., Jalaludin, B. and Torvaldsen, S. (2018) Seeking fresh food and supporting local producers: Perceptions and motivations of farmers' market customers. *Australian Planner*, 55(1), 28–35.

- Culinary Institute of America (n.d.) The future of food - exploring food innovations of tomorrow. www.ciachefs.edu. Accessed March 24, 2021.
- Diaconescu, D.M., Moraru, R. and Stănciulescu, G. (2016) Considerations on Gastronomic Tourism as a Component of Sustainable Local Development. *Amfiteatru Economic Journal*, 18(10), 999-1014. The Bucharest University of Economic Studies, Bucharest, ISSN 2247-9104,
- Ellis, A., Park, E., Kim, S. and Yeoman, I. (2018) What is food tourism? *Tourism Management*, 68(1), 250–63.
- Evans, O. (2018a) Digital agriculture: mobile phones, internet & agricultural development in Africa. *Actual Problems of Economics* 7–8(205–206), 76–90.
- Evans, O. (2018b) Connecting the poor: the internet, mobile phones and financial inclusion in Africa. *Digital Policy, Regulation and Governance* 20(6), 568–581.
- Everett, S. (2016) Food and drink tourism: Principles and Practices. London: People.
- Hall, C. M. and Mitchell, R. D. (2001) Wine and food tourism. In N. Douglas and B. Derrett (eds), *Special Interest Tourism: Context and Cases*, John Wiley and Sons, pp. 307–29.
- Hall, C. M., Sharples, L., Cambourne, B. and Macionis, N. (2009) *Wine tourism around the world*. Oxford: Routledge.
- Hall, C. M. and Gössling, S. (2016) *Food tourism and regional development: networks, products and trajectories*, Oxford: Routledge.
- Ikäheimo, J. (2020) Exclusive craft beer events: Liminoid spaces of performative craft consumption. *Food, Culture and Society*, 23(3), 296–314.
- Jeaheng, Y. and Han, H. (2020) Thai street food in the fast growing global food tourism industry: Preference and behaviors of food tourists. *Journal of Hospitality and Tourism Management*, 45(4), 641–655.
- Kuhzady, S., Cadici, C., Olya, H. G. T., Mohajer, B. and Han, H. (2020) Couchsurfing involvement in non-profit peer-to-peer accommodations and its impact on destination image, familiarity, and intentions. *Journal of Hospitality and Tourism Management*, 44, 131–142.
- Leer, J. (2020) Designing Sustainable Food Experiences. *International Journal of Food Design*, 5(1 & 2), 65-82 https://doi.org/10.1386/ijfd_00010_1
- Long, L. (2004) *Culinary Tourism (Material Worlds)*. Lexington, KY: The University Press of Kentucky.
- Mathouraparsad, S., and Maurin, S. (2017). Measuring the multiplier effects of tourism industry to the economy. *Advances in Management and Applied Economics*, 7(2), 123–157.

- McCann, K. (n.d.) Pros and Cons of Offering Food Delivery Service. <https://www.touchbistro.com/blog/pros-and-cons-of-offering-food-delivery-service/>. Accessed March 24, 2021.
- Merritt, M. G., Delong, K. L., Griffith, A. P. and Jensen, K. L. (2018) Consumer willingness to pay for Tennessee certified beef. *Journal of Agricultural & Applied Economics*, 50(2), 233–254.
- Ogechi, A. and Olaniyi, E. (2020) ICT, infrastructure and tourism development in Africa. *Tourism Economics* 26(1), 97–114.
- Pendrill, K. (n.d.) How Restaurant Technology can help you Reopen and Adapt to COVID-19. <https://www.touchbistro.com/blog/how-restaurant-tech-can-help-you-reopen/> Accessed March 24, 2021
- Quigley, K., Connolly, M., Mahon, E. and Mac Con Iomaire, M. (2019) Insight from insiders: A phenomenological study for exploring food tourism policy in Ireland 2009-2019. *Advances in Hospitality and Tourism Research* 7(2), 188–215.
- Research and Markets (2020) Global Culinary Tourism Market (2020 to 2027) - by Activity Type, Age Group and Mode of Booking. <https://www.prnewswire.com/news-releases/global-culinary-tourism-market-2020-to-2027---by-activity-type-age-group-and-mode-of-booking-301106550.html>www. August 2020. Accessed on April 3, 2021
- Rita, P., Brochado, A., and Dimova, L. (2019) Millennials' travel motivations and desired activities within destinations: A comparative study of the US and the UK. *Current Issues in Tourism*, 22(16), 2034–2050.
- Roy, H. and Ballantine, P.W. (2020) Preferences and attitudes toward locally produced food sourcing in wholesale distributors: Restaurant and chef perspectives *Journal of Hospitality and Tourism Management* 45(4), 544–558.
- Slocum, S. L. and Curtis, K. R. (2017) *Food and Agricultural Tourism: Theory and Best Practice*, Oxford: Routledge.
- Synder, H. (2019) Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, 104, 333–339.
- Starr, S., 2020. COVID-19, and the 4 New Paradigms of Guest Perception. QSR Magazine. May. <https://www.qsrmagazine.com/outside-insights/covid-19-and-4-new-paradigms-guest-perception>.
- Suntikul, W. (2019) Gastro diplomacy in tourism. *Current Issues in Tourism*, 22(9), 1076–1094.
- Tsai, C.T and Wang, Y.C. (2017) Experiential value in branding food tourism. *Journal of Destination Marketing and Management*, 6(1), 56–65.

- UNWTO (2021) International Tourism Highlights 2020 Edition
<https://www.e-unwto.org/doi/book/10.18111/9789284422456>.
Accessed March 19, 2021
- Vesci, M. and Botti, A. (2019) Festival quality, theory of planned behavior and revisiting intention: Evidence from local and small Italian culinary festivals. *Journal of Hospitality and Tourism Management*, 38, March 5–15.
- Vigors, B. (2018) Reducing the consumer attitude–behaviour gap in animal welfare: The potential role of ‘nudges’. *Animals*, 8(12), 232.
- Wang EHH (1999) ICT and economic development in Taiwan: analysis of the evidence. *Telecommunications Policy* 23(3–4), 235–243.
- Wei, C., Chen, H. and Lee, Y.M. (2021) Factors influencing customers’ dine out intention during COVID-19 reopening period: The moderating role of country-of-origin effect. *International Journal of Hospitality Management*, 95 March <https://doi.org/10.1016/j.ijhm.2021.102894>
- Wondirad, A., Kebete, Y. and Li, Y. (2021) Culinary tourism as a driver of regional economic development and socio-cultural revitalization: Evidence from Amhara National Regional State, Ethiopia. *Journal of Destination Marketing and Management*, 19, March 100482
<https://doi.org/10.1016/j.jdmm.2020.100482>
- World Food Travel Association. (2019) *2019 state of the food travel industry report*. Accessed 24, March 2021
<https://www.scribd.com/document/435869037/2019-State-of-the-Food-Travel-Industry-FINAL>.
- World Food Travel Association. (2020) *The evolution of food tourism*. Accessed March 24, 2021 <https://worldfoodtravel.org/what-is-food-tourism-definition-food-tourism/>.

ARTIFICIAL INTELLIGENCE APPLICATIONS AND IMPACT ON CONSUMERS – WITH A VIEW ON ROMANIAN CONSUMERS' PERCEPTIONS AND ATTITUDES RELATED TO AI

EMANUEL SANDA¹

ABSTRACT. Artificial Intelligence based technologies are becoming more and more pervasive in people's lives. Whether it takes the form of machine learning algorithms, Internet of Things smart devices, virtual assistants, chatbots, robots, AR/VR experiences, consumers are faced directly or indirectly, conscientiously or unconscientiously, with a variety of incarnations of what is generically called AI.

The current debate surrounding AI seems to focus on a few major aspects related to this next technological breakthrough. Right from the start, there is intense discussion even around the definition of AI: what is and what is not AI, how broad of a definition can be applied, and which of the many current and envisaged applications are actually 'intelligent'. Then, there is the critical issue of the use of consumers' personal data and underlying privacy issues, as AI seems to be built and thrive on being fed enormous amounts of data of various kinds. And lastly, there seems to be increasing concern regarding the potential for AI to evolve into AGI (Artificial General Intelligence – independent self-reliant robots) and the threats this poses to humanity.

A subject of potentially equal importance could be AI applications and implementations are impacting individuals' lives and the manner in which people relate to, perceive and assess AI and the underlying current technologies, both in terms of the impact in their daily lives, as well as in terms of expected prospects for the future.

This paper looks at the progress made so far in addressing some of the above questions and, by analyzing data from EU's 2017 Eurobarometer study, attempts to reveal how various Romanian consumer segments

¹ The Bucharest University of Economic Studies, Romania, e-mail:
sandaemanuel20@stud.ase.ro

perceive and relate to AI and current technologies. It identifies potential emerging inequalities from access, acceptance and usage of these technologies at present and in the future. The paper also sets out future directions for further understanding of the intricate relationship between human consumers and emerging AI tech, both in terms of benefits as well as potential threats.

Keywords: Artificial Intelligence, algorithms, consumer behavior, decision making

JEL Classification: M30, M31, M39

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Introduction

Artificial Intelligence seems to be one of the top trending topics of our current age, both among academics, as well as the general public. The phrase is tossed around usually in connection with the most cutting edge technologies at peoples’ disposal, but equally in relation to some which are currently in early development but have the potential to bring about a future that will bear little resemblance to our present times. It is the paradox of our times, that while many people around the world still lack access to basic necessities, such as clean running water, the same people, along with billions others from the more developed world, will own an internet connected smart phone capable of running some form of AI application.

But what actually is AI? What is the meaning (or meanings) people attach to this phrase when using it in conversations, research papers, news and opinion articles? Is there one connecting thread or are there many and varied understandings of the term? And if so, what are the implications?

This paper will attempt to provide a brief summary of the talk around AI at present, looking at various definitions, understandings and levels of development of AI. Apart from the manner in which the scientific and tech communities position themselves relative to AI and what it means, a greater concern is envisaged in relation to how the general public, the millions and billions of users of AI powered products and services, perceive and relate to AI as the emerging and potentially most disruptive technology of our times.

Artificial Intelligence – some definitions

While Artificial Intelligence is defined in many different ways, common elements could possibly be identified and a unified vision could eventually be achieved. (De Bruyn et. al., 2020) The challenge stems from the latter half of the phrase – what is and how do we define intelligence itself? Depending on who one asks, whether a psychologist, a neuroscientist, or maybe a philosopher, the definitions of intelligence could be counted in the tens. (Legg & Hutter, 2007)

One of the most widely accepted definition of AI is intelligence demonstrated by machines which would otherwise be observable only in humans (Shieber, 2004). It then follows that, similar to human intelligence, artificial intelligence should be capable of learning, understanding, reasoning, applying logic, solving problems and being capable of decision making, while the next level would be self-awareness – an area of even greater debate, as human conscientiousness itself still seems to escape pundits.

When looking at the various characteristics of intelligence and what they entail, one can conclude that most (the vast majority) of what is called AI at present is actually Machine Learning (ML), which could be simplest understood as the intersection between statistics and computing, resulting in algorithms capable of making certain predictions, based on certain inputs, leading to specific actions or decisions. (Jordan, 2019) ML is not actually new and could be considered the precursor (or originator) of Artificial Intelligence, as the first endeavors in the area of using computers to analyze data and find patterns based on which certain predictions could be made, which in turn would trigger specific decisions, date years back, as the preoccupation of engineers in automating industrial processes.

When dimensions related to self-learning, self-awareness, sentient machines are added to ML, we then move on to what is called AGI – Artificial General Intelligence – which some researchers maintain is the only level or form we should refer to as AI – the only one that bears a real semblance to human intelligence. (Goertzel, 2015; Haenlein & Kaplan, 2019)

Consequently, along the wide spectrum of definitions – as well as expectations – from AI, either everything could be called AI (meaning any simple statistical model and algorithm processed by a machine and yielding a certain output), or nothing yet could be called AI (as long as we are yet to attain AGI as defined above). (De Bruyn et. al., 2020)

Applications of AI – current state and future trends

Opting for a broader definition of AI as previously outlined, one question that arises is related to what are the current implementations, incarnations, applications of Artificial Intelligence that the general public is most likely to encounter on a day to day basis. What follows is a review of some of the most common services and products which espouse some form of AI, with no claim of exhaustiveness or comprehensiveness.

Recommender systems / algorithms: perhaps the most common form of applied AI and one which is present in individuals' lives at every toss and turn. Consider this: you wake up in the morning and as the habit is these days, the first thing one does is to pick up his / her smartphone. Without even unlocking it, the screen may display such information as the current weather and next hours forecast, state of the traffic from home to school or work, and upcoming calendar appointments. An algorithm powering your phone has culled this data from various sources residing on your phone to assemble the most relevant picture of your day from the very early hours of the morning.

As the day progresses, without even departing from the said device, you may find yourself writing a text message or email, at which point the predictive keyboard will try to guess and recommend words or phrases that might fit into what you are trying to say. Opening the search engine of choice in your web browser, typing just the first letters of your search will bring up a list of suggestions most relevant to your needs, location and time of day.

When the time comes to place your next online order, whether for groceries, supplies, or the rarer purchase of an expensive item, your choice of e-commerce platform will be ready to assist with recommendations based on your own past purchase history, or that of millions other shoppers that an AI has deemed to be just like you. (Smith & Linden, 2017)

The day is almost done and as you settle in front of the TV for some entertainment, YouTube, Netflix, Instagram or TikTok will be ready to assist, serving you the next episode in that series you've been watching for a while or a similar movie / show / clip that has a high probability of delivering maximum enjoyment and pleasure. (Haenlein & Kaplan, 2019)

All of the above are powered by sometimes simple, sometimes more complex, but all of them very data hungry algorithms whose simple logic could be summed up as: IF THIS THEN THAT, IF NOT THEN ELSE. All trying to guess, to predict what should come next – based on what has come before, from you, but also from millions other users 'like you'.

According to some sources, AI-powered recommender algorithms have become critical for the likes of Amazon (accounting for an estimated 35% of its revenues) (Forbes, 2018), or Netflix, where 80% of its content consumed by subscribers is influenced by its recommendation system, generating \$1 billion in revenue per year. (Gomez-Uribe & Hunt, 2016)

Intelligent Digital Assistants: growing in popularity (and ubiquity), these personal assistants (such as Apple's Siri or Amazon's Alexa) can help one with simple tasks, such as finding quick answers to specific questions, scheduling calendar appointments or setting reminders, dictating and sending text messages, or placing simple online orders for groceries and other items. Based to a large extent on algorithmic logic, fed by millions data points, and augmented with natural language processing abilities (NLP), these assistants are becoming an ever increasing presence in peoples' lives – an opportunity for the general public to experience and assess the current progress in AI, but also its most obvious limitations.

Chatbots: an increasing number of customer care / service centers these days are being staffed by software robots capable of carrying on simple conversations with unsuspecting clients. Whether calling your bank to obtain basic information such as how to open an account or what your balance

is, or going online to help centers to engage with a company or brand, you are more likely than not to be met by a robot employing NLP tech and predictive algorithms in an attempt to anticipate and answer you queries – while sounding as ‘human’ as possible. (Luo et. al., 2019)

Physical intelligent robots: while many dabble in distant visions of a sometimes dystopian future (as exemplified by recent efforts such as Sophia the robot or Boston Dynamics NYPD robo-dog), perhaps the most palpable form of physically incarnate intelligent robot is currently represented by the self-driving autonomous vehicle (from delivery drones, to driverless trucks to autopilot driven EV’s and similar). With tens of different players involved in and fiercely competing for this potentially huge market, autonomous vehicles seem to be making slow and modest progress, not in small measure due to an intense scrutiny from both authorities and the general public. Case in point, the recent deadly accident involving a Tesla and two passengers driving on autopilot received wide coverage, while at the same time tens or hundreds of lethal accidents in the same geographical area, but involving traditional cars and drivers, go largely unnoticed and unreported.

Challenges of AI

While the growth of AI has been exponential and will continue to be so for the foreseeable future, permeating every facet of our lives, increasingly there is talk about the challenges and threats posed by this technology and the way it will impact individuals and societies, for better or for worse. Increasingly, academics, business people, and regulators alike are involved in and shaping what is now a new field – AI ethics. Perhaps most telling with regards to the perceived potential threat of AI tech are recent examples, somehow reminiscent of Dr. Frankenstein’s story, in which individuals are turning against their own creations and becoming advocates of human freedoms and privacy in the face of AI, such as Britney Kaiser, of the infamous Cambridge Analytica – Facebook scandal, or Caolan Robertson, of the Tommy Robinson – YouTube scandal.

Following in the line of AI applications outlined in the previous chapter, it seems that the biggest concerns related to AI stem from (Du & Xie, 2020):

- algorithmic biases, and the incorporation of ethical values of the intended target consumers – from a product perspective (Howard & Borenstein, 2018)
- data ownership and privacy, as well as cybersecurity threats and concerns – from a consumer / user perspective (Gwebu et. al., 2018)
- the impact on the social fabric and human interactions, the potential loss of jobs, unemployment and the rise of the so called useless class (Harrari, 2019) – from a broader societal perspective.

On the receiving end, individuals (as consumers) seem to hold ambivalent feelings towards AI-powered technologies: while most everyone seems to welcome and enjoy the benefits, novelty, sense of amazement and awe, when using products and services driven even in part by some form of AI; at the same time, many are harboring feelings of fear and dread resulting from the potential malevolent manifestations of such technologies. (Mick & Fournier, 1998)

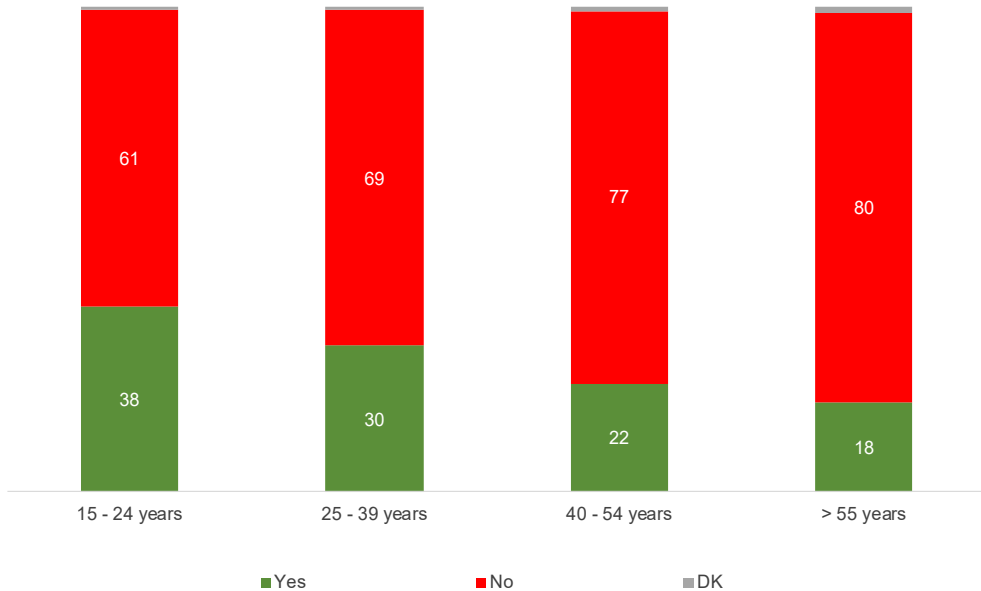
Romanian consumers' attitudes towards AI

In this section of the paper we look at some of the results of the 2017 EU wide Eurobarometer (European Commission, 2017) in order to capture some of the perceptions and attitudes of Romanian consumers in relation to the impact of the most recent technologies in their lives, and particularly that of Artificial Intelligence and robots. In particular, we look at the divide between various age groups, with the aim of identifying gaps and discrepancies which could lead to further inequalities in the society as AI and related technologies advance in the future and impact to an even larger degree the lives and livelihoods of various consumer groups.

In this particular wave of the Eurobarometer, 1089 Romanian individuals were interviewed, with a split on age groups as follows: 15-24 years old N=121; 25-39 years old N=342; 40-54 years old N=290; 55 years old and up N=337.

The first piece of information we look at is the perceived exposure to AI, as illustrated in Chart 1. Respondents were asked if in the past year they had heard, read or seen anything related to AI. What is striking about these findings is that even among the younger age groups, comprised to a larger extent of individuals more versed in technology, the perceived exposure to AI seems quite low. As expected, among older individuals, presumably less digitized or technologized, the numbers drop to about half. While question asked specifically referred to conscientious exposure to information related to AI, the low numbers of positive answers could also be interpreted as a lack of awareness among consumers regarding the ways in which AI is already present in our lives.

Chart 1 - In the past 12 months, have you heard, read or seen anything related to AI?

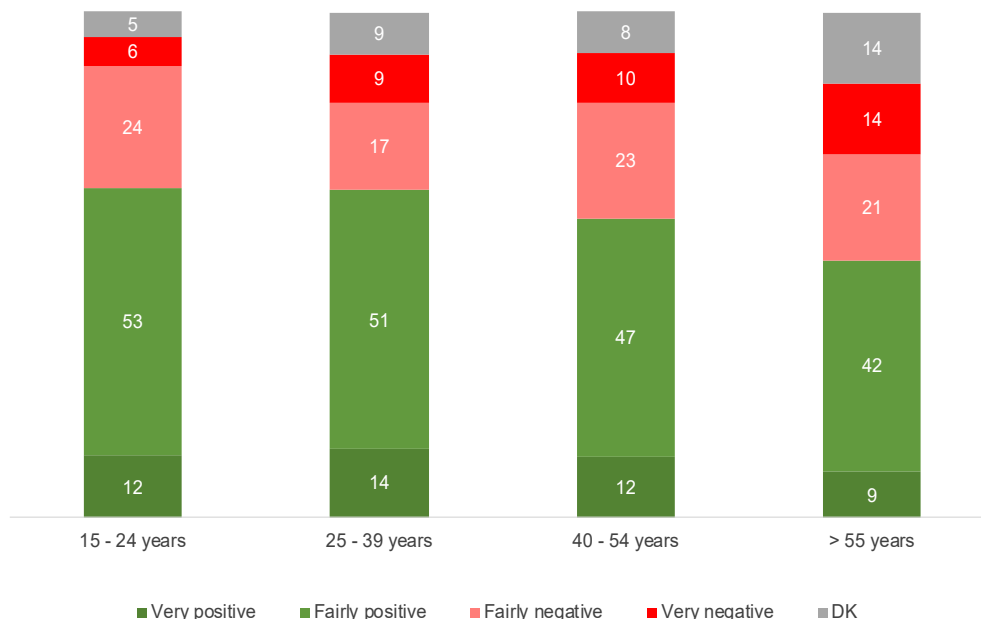


Source: Eurobarometer

The next piece of information we look at is the expressed overall opinion of respondents regarding robots and AI (Chart 2). On this subject, while a majority of respondents seem to have a positive attitude across

all age groups, the level of skepticism is increasing with age, reaching the highest levels among those who might be most vulnerable to the advances of AI technologies and manifestations in the future.

Chart 2 – General opinion about robots and AI



Source: Eurobarometer

Similarly, when asked to assess the kind of impact the most recent technologies have had in their lives (Chart 3), one can observe the big differences between younger individuals, who tend to opine that technologies have a positive impact in their lives to a much larger degree, while a majority of older individuals either perceive the impact of technology as negative or are unable to offer a clear binary positive / negative assessment.

In terms of the threats posed by robots and AI relative to jobs replacement / loss (Chart 4), large proportions among all age groups, but particularly among older individuals, seem quite sure of the irreplaceability

of their jobs – which can also be interpreted as a lack of awareness regarding the potentially disruptive impact AI and emerging technologies might have on jobs in a not too distant future.

Finally, when asked which stakeholders are expected to tackle the various challenges posed by emerging technologies and AI (Chart 5), respondents seem to generally place more trust in national authorities, rather than EU authorities or the companies themselves. While this can also be interpreted as an expectation from society regarding the role national authorities should play in regulating AI and protecting consumers, the emphasis put on them could also be indicative of a lack of perspective regarding the truly global impact emerging technologies and AI are having and the need for a concerted effort of trans-national and cross-border stakeholders in acting in the best interest of individuals across the globe.

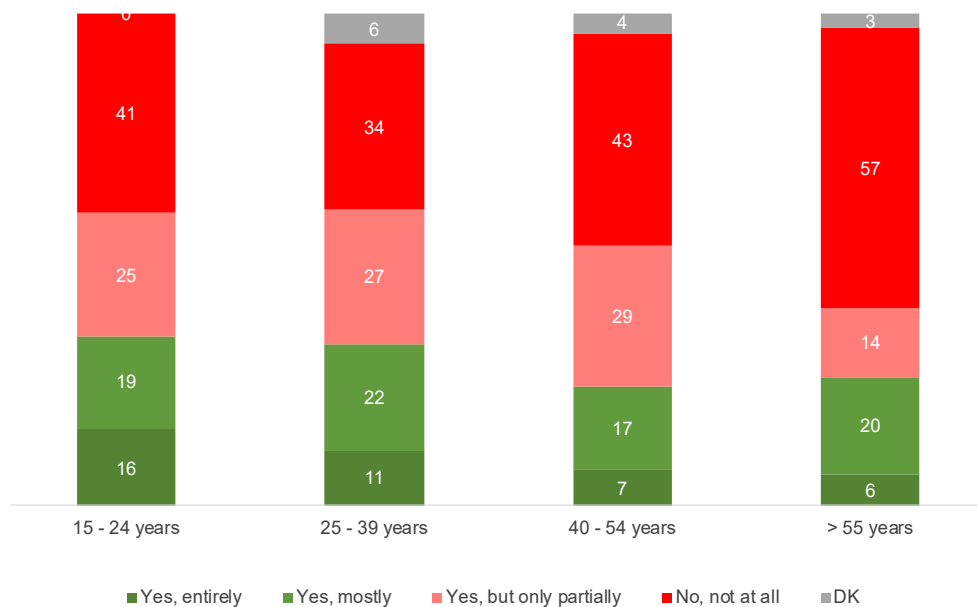
Chart 3 – What impact have the most recent technologies had on your daily life?



Source: Eurobarometer

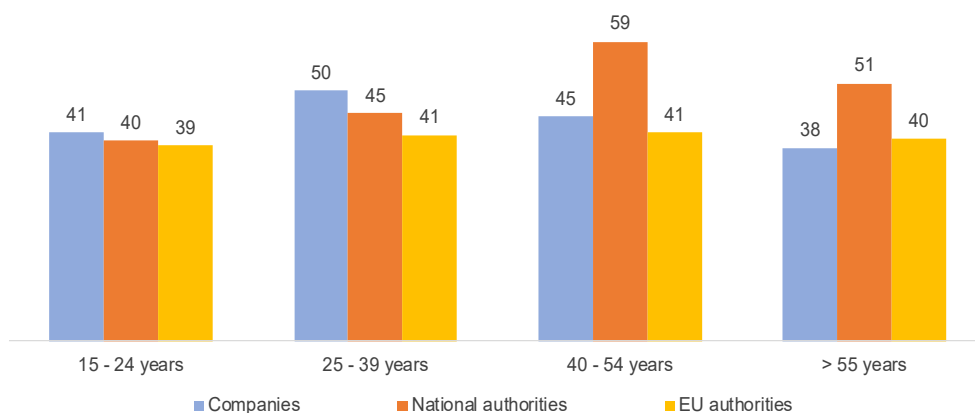
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Chart 4 – Could your current job be done in the future by robots or AI?



Source: Eurobarometer

Chart 5 – Which of the following actors are best positioned to act in order to tackle the impact of the most recent technologies?



Source: Eurobarometer

Conclusions and further research directions

This paper has looked at the current state of AI development, starting from the on-going debate about how we define AI, followed by an overview of some of the most common current AI implementations with which individuals and consumers experience increasing levels of interaction, then looking at some of the challenges posed by AI at present and potential emerging threats in the future. In the end, we looked at some of the findings of the 2017 Eurobarometer in terms of how Romanian consumers position themselves relative to current technologies and AI, revealing an existing and potentially growing inequality gap among generations and age groups, with older individuals seemingly at higher risk of being alienated as well as made more vulnerable in the face of rising AI tech.

The paper calls for more empirical research in order to identify consumers' awareness and openness to accommodating such technologies in their daily lives, as well as being aware and prepared to deal with the implications of their adoption. Further research is needed to both update the knowledge on perceptions and attitudes in 2021, as the COVID-19 pandemic accelerated several trends in the tech and AI industries; but also to determine the real levels of beneficial impact of these technologies in bettering consumers' everyday lives, while also uncovering their potential for harm.

REFERENCES

- De Bruyn, A., Viswanathan, V., Shan Beh, Y., Kai-Uwe Brock, J., von Wangenheim, F., 2020. Artificial Intelligence and Marketing: Pitfalls and Opportunities. *Journal of Interactive Marketing*.
- Du, S., Xie, C., 2020. Paradoxes of artificial intelligence in consumer markets: Ethical challenges and opportunities. *Journal of Business Research*.
- European Commission and European Parliament, 2017. Eurobarometer 87.1. GESIS Data Archive.
- Forbes (2018). How Amazon has reorganized around artificial intelligence and machine learning.

- Goertzel, B. (2015). Artificial general intelligence: Concept, state of the art, and future prospects. *Journal of Artificial General Intelligence*.
- Gomez-Uribe, C. A., Hunt, N., 2016. The Netflix recommender system: algorithms, business value, and innovation. *ACM Transactions on Management Information Systems*.
- Gwebu, K. L., Wang, J., & Wang, L., 2018. The role of corporate reputation and crisis response strategies in data breach management. *Journal of Management Information Systems*.
- Haenlein, M., Kaplan, A., 2019. A Brief History of Artificial Intelligence: On the Past, Present, and Future of Artificial Intelligence. *California Management Review*.
- Haenlein, M., Kaplan, A., 2019. Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence. *Business Horizons*.
- Harari, Y. N., 2019. 21 Lessons for the 21st Century. Random House.
- Howard, A., Borenstein, J., 2018. The ugly truth about ourselves and our robot creations: The problem of bias and social inequity. *Science and Engineering Ethics*.
- Jordan, M., 2019. Artificial Intelligence – The Revolution Hasn't Happened Yet. *Harvard Data Science Review*.
- Legg, S., Hutter, M., 2007. A collection of definitions of intelligence. Proceedings of the 2007 conference on advances in artificial general intelligence. Amsterdam, The Netherlands: IOS Press.
- Luo, X., Tong, S., Fang, Z., Qu, Z., 2019. Frontiers: Machines vs. Humans: The Impact of Artificial Intelligence Chatbot Disclosure on Customer Purchases. *Marketing Science*.
- Mick, D. G., Fournier, S., 1998. Paradoxes of technology: Consumer cognizance, emotions, and coping strategies. *Journal of Consumer Research*.
- Shieber, S.M., 2004. The Turing Test: Verbal Behavior as the Hallmark of Intelligence. Cambridge: MIT Press.
- Smith, B., Linden, G., 2017. Two decades of recommender systems at Amazon.com. *IEEE Internet Computing*.

ARTIFICIAL INTELLIGENCE IN TOURISM & HOSPITALITY – THE PERCEPTION OF TOURISTS AND TOURISM COMPANIES IN ROMANIA

MIHAELA-FILOFTEIA TUTUNEA¹

ABSTRACT. In a world where everyday life is directly influenced and focused on the use of technology as a support for individual and professional daily activity, we are all witnessing an increasingly obvious change in human interaction; we all notice how interpersonal interaction is rapidly being replaced by new technologies, solutions and application such as IoT and AI and which are going to completely change the perspective on human life so far. From this perspective and in the conditions of the ongoing pandemic, the present study focused on identifying the changes brought by AI solutions and applications in some of the most flexible and adaptable industries such as tourism and hospitality; in order to obtain a more complete picture, the study was oriented in a double perspective, namely the offer from the tourism & hospitality industry, on the one hand and the tourists, on the other hand; regarding the offer from tourism and hospitality, the study used both primary and secondary information, to visualize an image of the existing AI solutions/applications and adopted by the companies in these industries; For the category of tourists, knowing the generational difference regarding the new technologies from the perspective of the level of acceptance and their use, the study aimed at identifying generational profiles regarding the acceptance and use of AI applications in the tourist experience. We consider that the results of the study can be an important support for conducting more complex and comparative studies, related to the use of new technologies that obviously change the development of human society.

Keywords: AI (artificial intelligence), tourism, hospitality, generations

JEL classification: L86, M15, L83

¹ Associate Professor, Babeş-Bolyai University, Cluj-Napoca, Romania, Faculty of Business, Dept. of Hospitality Services, e-mail: mihaela.tutunea@tbs.ubbcluj.ro

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Introduction

In the last two decades, our everyday, ordinary reality, began to be modified, remodeled, improved, being added new levels of detail, new forms of visualization and interpretation. There is nothing new in the fact that everyday life, generally anchored in our well-known reality, has begun to be populated by some very interesting acronyms such as VR (Virtual Reality), AR (Augmented Reality), MR (Mixed Reality), XR (Extended Reality), ML (Machine Learning), AI (Artificial intelligence) and the like.

Also, in the business environment, companies have begun to face a new type of challenge related to adapting and adopting new solutions offered by current technologies, namely “artificial intelligence, augmented reality, blockchain, drones, internet of things, robotics, virtual reality, 3-D printing” (PWC, 2021).

Thus, today it can no longer be classified as being in the SF category, none of the activities such as: “smart personal assistants, ride sharing apps like Uber and Lyft, commercial flights use an AI autopilot, spam filters or smart email categorization, plagiarism checkers or robo-readers, mobile check deposits or credit decisions, fraud prevention, machine learning to identify the contextual meaning on social networking, recommendations in online shopping, etc.” (Emerj, 2021).

It is obvious that Artificial Intelligence (AI), with all the solutions/applications it brings in the real world, marks more and more deeply the individual life as well as the business life, in all fields of activity and all industries.

It is well known that the term “Artificial Intelligence” was introduced by John McCarthy in 1956 during a conference; but the concept that machines can think came into existence long before that” (Verma et al., 2021, p. 402).

Artificial Intelligence (AI), is defined in multiple forms, from very suggestive and simple, to very technical and complex; AI, can be considered as “a branch of computer science which believes in giving machines human resemblance to facilitate human tasks in a better way” (Verma et al., 2021, p. 402).

AI, is defined as “sophisticated computing capabilities as it can deal with complex relationships and problems among different concepts and can easily work with a big amount of data; also, “AI functions similar to a human brain as it thinks, learns, makes decisions and inferences through given data by using intelligent machines; the main purpose of AI is to enable machines to complete tasks automatically without needing a human brain “(Kirtil & Askun, 2021, p. 206).

We’ve all seen how in recent years, they have imposed other well-known solutions in the artificial intelligence category, such as: „manufacturing robots, self-driving cars, smart assistants, proactive healthcare management, disease mapping, automated financial investing, virtual travel booking agent, social media monitoring, inter-team chat tool, conversational marketing bots, Natural Language Processing (NLP) tools” (Bultin, 2021).

AI, is considered a universal background, being able to cover extremely varied activities, “all of an intellectual nature, starting with learning and perception, in general and continuing with the game of chess, proving mathematical theorems, writing poems, driving a car on a street agglomeration and disease diagnosis “ (Russel & Norvig, 2010, p.1); we can also find AI applications, in “speech recognition, autonomous planning and scheduling, spam fighting, logistics planning, robotics, etc.” (Russel & Norvig, 2010, p.28-29).

In transport, AI solutions will be able to solve problems of “reducing traffic congestion and carbon emissions, using the solutions such as: autonomous vehicles, delay predictions, traffic management, drone taxis” (Verma et al., 2021, p. 407).

In medicine and patient care, there are AI solutions known and used: “smart patient monitoring systems, surgery assisting healthcare robots, mobile driven robotic consultants and intelligent system to reveal patterns in disease and their aid treatment by accessing multiple sources of data; also, it is expected that AI systems, will be able to predict the risk of certain disease of an individual and accordingly suggest preventive measures” (Verma et al., 2021, p. 408).

The highly sensitive field of public safety and security has also been enriched with AI solutions, based on “facial recognition and speech recognition system will improve the efficiency of administrative systems and reduce crime rates, fraud and sudden accidents; also AI applications are used to prevent from malwares and viruses and cybercrime” (Verma et al., 2021, p. 408).

By 2030, it is expected to develop AI-based services for home and service facilities, such as “robots tasks related to home and service, home robots would become common but the high costs and technical constraints will continue to limit commercial opportunities for future” (Verma et al., 2021, p. 408).

In education, AI will replace traditional system and “would help in evaluating the tests and giving the unbiased responses to the students with cost effectiveness” (Verma et al., 2021, p. 409)

AI solutions, can provide real help in “supporting communities with poor living conditions, being able to improve their conditions through applications to predict the needs of these communities for food or medicine and also by serving them with intelligently controlled devices, such as drones; these devices, we have all seen that they have received destinations as support vehicles in a lot of other special transport activities” (Verma et al., 2021, p. 409).

In Gaming industries, AI applications having “3D gaming system and playing with robots would be more fun” (Verma et al., 2021, p. 409-410).

In the tourism industry, in a case study of tourism city, a “conceptual framework was established from two perspectives, namely: the development of AI system for being a good host - with independent variables (attraction, accessibility, amenity, accommodation, activity) and the efficiency of artificial intelligence system for being a good host following the dependent variables (function, humanity, satisfaction)” (Hayeewangoh, et al., 2021, p.2581); the results showed that “AI system for being a good host can provide information according to the tourism component; it has the highest level of overall efficiency (Hayeewangoh, et al., 2021, p.2585).

In recent years, in the tourism and hospitality industry, we have encountered robots, “intelligent physical devices with a certain degree of autonomy, mobility, and sensory capabilities that allow them to perform intended tasks without human intervention” (Zlatanov & Popescu, 2019, p.87).

Real robots, which appear in hotels and airports, offering concierge-type information, are no longer part of the imaginative; the Hilton robot Connie is well-known, which offers suggestions based on the already known preferences.

Booking.com, showed that 80% of customers prefer self-service, so it is very logical that the interaction of tourists-AI solutions, will be very common in travel (Medium, 2021).

In the same industry, a new concept was imposed, namely, smart hotel, defined as "hotel which makes use of advanced technologies to streamline its operation in interacting with customers". (Kim et al., 2021, p. 2).

As tourists, we have all witnessed the smartification of accommodation, especially hotels by adopting new sets of devices and technologies to improve the tourist experience; such solutions as: "keyless entry, concierge video chat/mobile concierge, voice search for hotel room bookings, streaming devices for travel, wireless device charging, contactless and mobile check-in, digital controls (light, temperature, etc), robot room service, chatbots, smart management software, etc.", are part of quite common applications used by recognized companies in tourism and hospitality (Hoteltech, 2021).

It is also useful to consider "the most successfully realized applications of AI & Machine Learning in the travel industry, of which we all know the following: prediction system, chatbots, user experience management, recommender systems, sales optimization, costs optimization, fraud detection"(Hack, 2021).

According to Salesforce, "64% of travelers and 80% of business users expect travel companies to respond to them in real time"; that's why companies need to automate routine activities using chatbots, as a personal assistant who can answer questions or make recommendations on a particular topic in real time, offer a lot of benefits pre, during, and post-booking, for travelers as well as for companies using them (Inbenta, 2021).

Regarding the adoption of AI and robotics in the hospitality industry, a "set of influencing factors was established, namely: technology, organization, environment" (Nam et al., 2020, p.7); also, the role of AI solutions in this industry was analyzed, depending on the type of specific back-office and front-office activities, from two perspectives, namely - containment and substitution of manpower (Nam et al, 2020, p.8).

From another perspective, the adoption by tourism companies of AI solutions, robots and service-automation, can provide benefits from two major categories, namely financial (reduction of labour costs, increased sales) and non-financial (increased quality of services offered, creating added value for tourists by offering more fun services) (Ivanov and Webster, 2017, p. 2-3).

Also, the use of AI solutions in tourism can provide additional benefits, on the one hand for companies, by reducing the execution times of specific tasks and on the other hand, for tourists, who can receive useful information in real time, thus having much more time dedicated to the tourist experience itself (Grunder & Neuhofer, 2021, p. 8).

Problems related to the expansion of AI in our lives must also be considered; and here at least the following must be mentioned: “personal data and privacy, liability, consumer protection and empowerment, intellectual property rights, ethical aspects” (Europarl, 2021); also, it is very possible to predict that “AI, will may displace the jobs but it will create more jobs than it displaces as well as the costs will cut by 30-34% (Verma et al., 2021, p. 410).

AI, can have limiting effects both from an individual and social and economic perspective, “narrowing our field of vision and reducing our social and economic choices” (Drexler & Lapre, 2019, p.119).

From a statistical perspective, however, we must emphasize that, “the travel and hospitality AI market is estimated to surpass \$1.2 billion mark by 2026 growing at an estimated CAGR of more than 9.7% during the forecast period 2021 to 2026. Most hotels and resorts rely heavily on delivering excellent customer service to build their reputation based on AI technology” (Industryarc, 2021).

From another point of view, considering global demographic statistics, we can identify that, in 2020, the structure of the global population by age was (Indexmundi, 2021):

- 0-14 years: 25.33% (male 1,005,229,963/female 941,107,507)
- 15-24 years: 15.42% (male 612,094,887/female 572,892,123)
- **25-54 years: 40.67%** (male 1,582,759,769/female 1,542,167,537)
- 55-64 years: 9.09% (male 341,634,893/female 357,176,983)
- 65 years and over: 9.49% (male 326,234,036 / female 402,994,685)”.

Also, we have to underline that in the study we considered the generational classification based on the birth year of individuals: Gen Z/iGen/Centennials (1996 to present), Millennials/Gen Y (1977 to 1995), Generation X (1965 to 1976), Baby Boomers (BB) (1946 to 1964), Traditionalists or Silent Generation (1945 and before) (Busin, 2021).

From previous statistics, it is easy to see that the world's richest age group, 25-54, covers two generations, namely Gen X and Millennials.

Given the current pandemic situation, which humanity is going through and all the changes it has brought in all areas of activity, we also consider it useful to have a comparative view of the tourism industry before and after this period.

According to WTTC, prior to the pandemic, the tourism industry created across the world 10.6% of all jobs (334 million), generating 10.4% of global GDP (US\$9.2 trillion) and the international visitor spending amounted to US\$1.7 trillion in 2019 (6.8% of total exports, 27.4% of global services exports); during the pandemic, the same industry, in 2020, suffered a loss of almost US\$4.5 trillion, 62 million jobs were lost, representing a drop of 18.5%, the Domestic visitor spending decreased by 45% and the international visitor spending declined by 69.4% (WTTC, 2021).

Expedia has reported encouraging issues, such as: travelers will take more trips and extend their vacations, consumer spending will be high in 2021 and travel will serve as a force for good, generating greater cultural understanding and being healing (Businesswire, 2021).

Considering these aspects related to AI and the use of its solutions both on a large scale and in tourism, the present study aimed to identify the perception regarding the adoption and use of AI solutions in the tourism and hospitality industry; the study was conceived in a double vision, tourists and companies from the tourism and hospitality industry in Romania.

From the perspective of the obtained results, we consider that these can provide the useful informational basis for studies from the same area, more extensive, more complex or comparative; also, the tourism companies as well as the companies from the software industry and the developers of solutions/applications and AI technologies, can benefit from an important information source for their specific activity.

Materials and methods

Knowing that the pandemic period, we all went through, brought some specific limitations in all activities, for conducting this study were used time-differentiated periods; thus, in the case of tourists, the study period was 20 February-15 March 2021, and for tourism and hospitality companies, two distinct periods were completed, namely 20 February - 15 March 2021 and 1 April - 1 May 2021.

The mobile survey was used based on the administration of two questionnaires specific to each segment studied; the questionnaires were placed in social networks; only Facebook and Tweeter were used in this phase, given the fact that the study targeted the Romanian digital segment; the studied population, in the case of individuals from their perspective of tourists, was made up of 687 subjects, users of mobile social networks, of which 655, formed the final sample; the questions of the questionnaire were divided into two modules; the first module aimed at identifying the aspects regarding the utility and use of AI applications in the tourist experience; the second module, covering questions related to the socio-demographic profile of the respondents (gender, age, educational level, income).

In the case of tourism & hospitality companies in this phase of the study, only those from Romania were selected, present as corporate users of Facebook and Tweeter; the questionnaire for this segment of the population was also structured in two parts; the first part was composed of general identification questions of the company (type of activity, age on the profile market), and the second part was dedicated to collecting information on companies' perception of utility, use of AI solutions, and advantages and disadvantages perceived by them on these solutions; in the study were considered 197 companies in total, and valid questionnaires maintained for analysis were 194.

Results and discussions

After the analysis of the data collected from the two questionnaires, the following aspects could be identified:

For tourism & hospitality companies:

- The structure of the sample, depending on the type of activity and their age on the profile market, identified the restaurants as the best represented (40.21%), followed by hotels; and, from the perspective of their age on market, the companies with over 10 years of profile activity represent the most important segment (Table 1);

Table 1. Sample structure
(companies in tourism sector - activity and age)

Type of activity		
	No (194)	%
Hotels	72	37.11%
Hostels	23	11.86%
Restaurants	78	40.21%
Travel agencies	21	10.82%
The age of the company on the market		
		%
Under 5 years		12.5%
5-10 years		28.4%
>10 years		59.1%

Source: author's data

- Appreciation of the utility in adopting AI solutions in one's own activity, was identified using a Likert scale from 1 to 5; the results identified the predominant segment of companies that consider AI solutions very useful (63.13%) in their own activity, while low levels of perception of no or very little importance are completely missing (Figure 1);

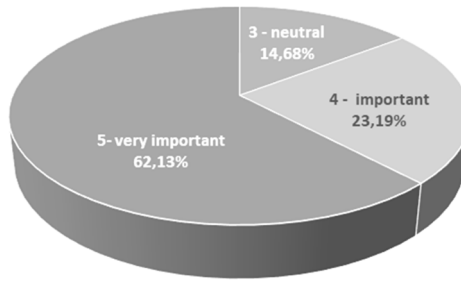


Figure 1. Perception of AI utility

Source: author's data

- Regarding the type of activity for which the companies consider useful the use of AI applications, the ones specific to the activities in the restaurant/dining service were indicated as preferred (23.12%), followed closely by room service and informational support; the least indicated in the preferences are the applications dedicated to events (Figure 2);

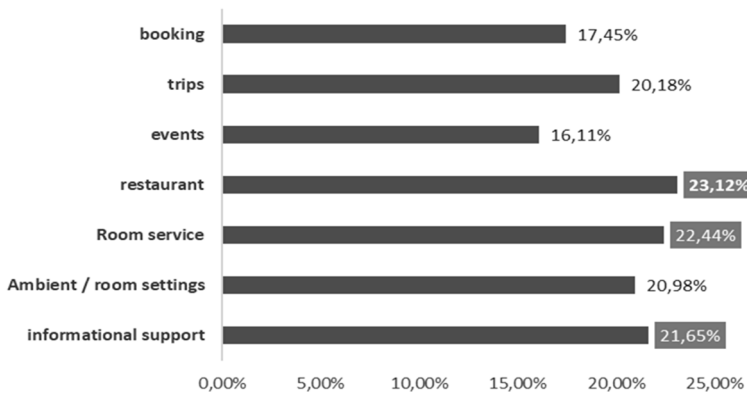


Figure 2. AI application type considered to be used

Source: author's data

- In identifying the current use of AI applications, the list of options was made up of chat bots, ambient/room settings, room service, restaurant, events, trips, booking, mobile AI app, decision support systems and we do not have; a very high percentage of respondents, 90.83%, answered that they do not have an AI application at all,

while the remaining 9.17% indicated that they use chat-bots; it is possible, however, that in this answer, there is a significant percentage of confusion between web chat-bots and AI chat-bots, which can bring a possible alteration of the result, from this perspective;

- The perceived advantages/benefits in using AI solutions (Figure 3) - identified the competitive differentiation (87.12%) as the main perceived advantage and customers database as the last perceived (48.67%);

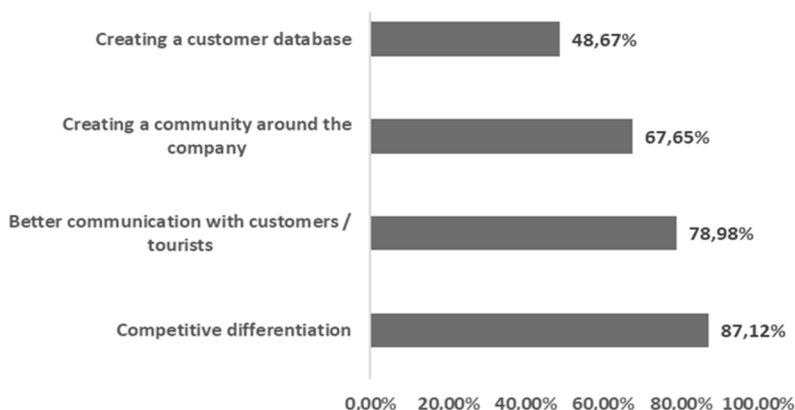


Figure 3. The advantages of using AI

Source: author's data

- From the perspective of the disadvantages generated by the adoption of AI solutions, the main indication is related to the high costs imposed by the adoption of these solutions, and the least indicated was the potential reduction of the number of jobs, as a result of adopting AI alternatives (Figure 4);

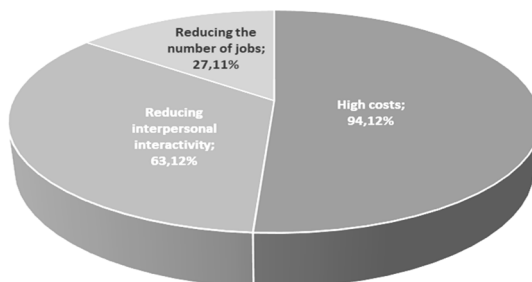


Figure 4. The disadvantages of using AI

Source: author's data

For Tourists:

- the data provided by the socio-demographic module of the questionnaire, identified Gen X, as the best represented segment, followed by those in Gen Y, with university education (40.31%), being slightly more present men (50.93%), and those with incomes over 5000 lei, represent the most consistent segment (68.96%) (Table 2);

Table 2. Socio-demographic structure

		(%)
Generation	After 1997 – Gen Z/iGen/Centennials	19.27
	1981-1996 – Millenials/ Gen Y	24.56
	1965-1980 – Gen X	31.12
	1946-1964 – Baby Boomers	19.32
	1928-1945 - Silent Generation	5.73
Education	Basic	0.87
	High school	25.62
	College	22.07
	University	40.31
	Post university	11.13
Gender	Female	49.07
	Male	50.93
Income	< 300 lei	8.29
	3001-5000 lei	22.75
	> 5000 lei	68.96

Source: author's data

- Tourists' perception of the usefulness of AI applications in the tourist experience was identified using a Likert scale, and the results identified that more than half of respondents (52.35%) consider these solutions useful, while there is a segment of almost 30 % of respondents who consider them unimportant or do not matter at all to them, having a neutral attitude (Table 3);

Table 3. Perception of AI utility

1 - not at all	0.00%
2 - little important	10.98%
3 - neutral	19.78%
4 - important	27.87%
5- very important	52.35%

Source: author's data

- in terms of activities where tourists would use AI, the largest segment indicated solutions dedicated to environmental settings (64.78%), followed by location/guidance (63.32%), and the least selected was booking (Table 4);

Table 4. Specific use of AI solutions

Accommodation assistance	49,57%
Restaurant/dining	38,76%
Booking	28,94%
Trips	55,78%
Location guidance	63,32%
Museums/tourist attractions	51,23%
Games/entertaining	46,12%
Informational support	59,13%
Ambient/room settings	64,78%
Room service	56,23%
Chat bots	51,45%
Communications	48,11%

Source: author's data

- Identifying the stage of the trip where tourists consider these AI solutions very useful, brought as a preference during-trip (69.54%), and lastly the post-trip stage; It should be noted that 32.11% of respondents indicated the usefulness of AI in all stages of the trip (Table 5);

Table 5. The trip stage of using AI

Pre-trip	15,67%
During trip	69,54%
Post-trip	12,04%
In all phases	32,11%

Source: author's data

- For the AI solutions, already used by the respondents, the largest segment is of those who have never used such an application; out of the 2.73% of AI users, most respondents indicated primarily that they use specific applications for museums/tourist attractions, followed by those for accommodation assistance, and the last one those for communications (Table 6);

Table 6. AI solutions used

I never used it	97.27%
Used	2.73%
Accommodation assistant	9.11%
Restaurant/dining	8.06%
Booking	6.78%
Trips	4.67%
Location/guidance	7.11%
Museums/tourist attractions	9.65%
Games/entertaining	7.11%
Informational support	3.75%
Ambient/room settings	2.57%
Room service	3.22%
Chat bots	15.77%
Communications	2.17%

Source: author's data

- The benefits perceived by tourists in the use of AI solutions, the main one indicated was the one support for tourists (76.11%), followed by those for improving the tourist experience, and the last perceived one was the quick access to useful information (Table 7);

Table 7. Perceived benefits in the use of AI

Quick access to useful information	59.23%
Reduction of waiting/service time	60.34%
Entertaining	48.23%
Support for tourists	76.11%
Improving the tourist experience	74.22%

Source: author's data

- The disadvantages perceived by tourists, imposed on the first places the one on lack of anonymity (39.59%) and privacy, and the last perceived one was the reduction of human interactivity (Table 8);

Table 8. Perceived disadvantages in the use of AI

Lack of anonymity	39.59%
Privacy	38.01%
Personal data security	34.26%
Reduced human interaction	19.11%
I don't see any disadvantages	34.57%

Source: author's data

- From the perspective of the influence of the existence of AI applications in selecting a certain tourism company, 67.78% of respondents answered yes, they would opt for such a company; this may indicate that for tourism companies, the adoption of AI solutions may become an important element of competitive differentiation.

Conclusions

For tourism companies, several important aspects can be outlined:

- it can certainly identify a current non-consumer profile of AI solutions (90.83%), but which is aware and obviously appreciates the need to use these solutions, regardless of their declared activity and their age on the market;

- the usefulness of adopting AI solutions in their own activity has been identified; this aspect reflects the knowledge of new technologies and solutions dedicated to the tourism and hospitality industry and the fact that they are aware of the need to adopt these solutions to keep up with tourists who are constantly up to date with new technologies and applications;
- can be identified their preference for a specific set of AI applications dedicated to activities directly focused on tourists, such as restaurant/dining, room service and informational support for tourists, which also indicates a very good knowledge of the profile of tourism consumers;
- the correct perception of the adoption and use of these solutions as a competitive advantage can also be emphasized; this may reflect a good knowledge of the competitive environment and about the huge need for differentiation in the profile market;
- the category of disadvantages in adopting AI solutions is clearly marked by the high costs of these solutions; but this may also suggest a lack of information and knowledge about the solutions and alternatives offered by ITC companies for SMBs or about or about highly diversified financial plans which can provide very advantageous conditions for companies.

At the level of the tourist segment, the results allow the identification, on the one hand, of a very wide segment of effective non-users of AI (97.27%), and on the other hand, from the very narrow segment of users, to be able to sketch a profile of AI user; this can be a man, from Gen X, with university studies, with incomes over 5000 lei, who perceives as very important AI applications in the tourist experience and considers especially useful those in the category of environmental support/room settings, location/guidance and informational support; has already used during-trip, dedicated applications from the museums/tourist attractions and location/guidance category; the AI user perceives as the main advantage of using AI, the improvement of the tourist experience and support for tourists; is well informed about privacy and data confidentiality, therefore the perceived disadvantages are directly connected with these issues; then, a very important aspect, especially for tourism companies, is the fact that the presence of these applications would clearly influence the choice of one company to the detriment of another that has not adopted AI solutions.

From a generational perspective, very useful aspects can be identified, also:

- a trans-generational preference for AI solutions, used during-trip, in the category museums/tourist attractions and for those that offer support for tourists;
- Gen X, Y, BB prefer AI applications from the category accommodation assistance, booking, trips, room service;
- Silent Gen, is the only one that has never used AI solutions in travel and does not consider them as an advantage in the selection of a travel company;
- Gen Z, is interested in solutions in the category trips/location guidance, museums/tourist attractions, games/entertaining, chat bots; they have already used these applications in these categories, they do not perceive any disadvantage and they are not yet influenced by the existence of these solutions in choosing the tourism company.

From the results obtained, ***tourism companies can identify***:

- the existence of a very important demand for AI applications, from tourists of all generations;
- the activities and categories of applications requested by tourists;
- the fact that the adoption of these solutions would ensure a real competitive advantage for them.

Also, companies in the ITC and new technologies industry would be extremely useful to launch campaigns to intensively promote the AI solutions they develop, as well as to conceive attractive financial plans, so that the tourism companies know how to select and adopt, the most suitable solution for their activity, as soon as possible.

Limitations

In this study, can be marked some limitations regarding the insufficient representativeness of the population included in the study and the consideration only of the one that can be subscribed to the Romanian online segment; but, we consider that the obtained results can constitute an important informational base for several categories of corporate users,

obviously starting with the companies in tourism, then with those in the software industry and the development of technologies; also, the results of the study can be used in the development of other more complex and comparative studies that can be carried out at regional and global level.

REFERENCES

1. Builtin (2021), <https://builtin.com/artificial-intelligence/examples-ai-in-industry>, accessed in January 2021
2. Businesswire (2021), <https://www.businesswire.com/news/home/20210216005474/en/Expedia-Group-Releases-Trends-and-Predictions-for-2021>, accessed in February 2021
3. Busin (2021), <https://www.businessinsider.com/generation-you-are-in-by-birth-year-millennial-gen-x-baby-boomer-2018-3>, accessed in January 2021
4. Drexler Nadine, Lapré Viyella Beckman (2019), "For better or for worse: Shaping the hospitality industry through robotics and artificial intelligence", *Research in Hospitality Management*, Vol. 9 No. 2, DOI: 10.1080/22243534.2019.1689701, p. 119, <https://www.ajol.info/index.php/rhm/article/view/192222>
5. Emerj (2021), <https://emerj.com/ai-sector-overviews/everyday-examples-of-ai/>, accessed in January 2021
6. Europarl (2021), https://www.europarl.europa.eu/doceo/document/TA-8-2019-0081_EN.html, accessed in March 2021
7. Grundner Lukas, Neuhofer Barbara (2021), "The bright and dark sides of artificial intelligence: A futures perspective on tourist destination experiences", *Journal of Destination Marketing & Management*, Volume 19, March 2021, 100511, p. 8, <https://www.sciencedirect.com/science/article/pii/S2212571X20301335>
8. Hack (2021), <https://hackernoon.com/successful-implications-of-ai-machine-learning-in-travel-industry-3040f3e1d48c>, access in March 2021
9. Hayeewangoh Nimarunee, Graitapon Temwitkajorn, Amorntep Maneenium (2021), "The Development of Artificial Intelligence System for Being a Good Host: A Case Study of Tourism City in Betong District, Yala, Thailand", *Psychology and education*, 58(2): 2579-2586 ISSN: 00333077, p. 2581, 2585, <http://psychologyandeducation.net/pae/index.php/pae/article/view/2419/2112>
10. Hoteltech (2021), <https://hoteltechreport.com/news/100-hotel-trends>, accessed in January 2021

11. Inbenta (2021), <https://www.inbenta.com/en/blog/chatbot-tourism-industry/>, accessed in March 2021
12. Indexmundi (2021), https://www.indexmundi.com/world/age_structure.html, accessed in January 2021)
13. Industryarc (2021), <https://www.industryarc.com/Report/18662/travel-hospitality-ai-market.html#>, accessed in February 2021
14. Ivanov Stanislav Hristov, Webster Craig (2017), "Adoption of Robots, Artificial Intelligence and Service Automation by Travel, Tourism and Hospitality Companies – A Cost-Benefit Analysis", Prepared for the International Scientific Conference "*Contemporary Tourism – Traditions and Innovations*", Sofia University, 19-21 October, p. 2-3, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3007577
15. Kim Jinkyung Jenny, Montes Antonio Ariza and Heesup Han (2021), "The Role of Expected Benefits towards Smart Hotels in Shaping Customer Behavior: Comparison by Age and Gender", *Sustainability*, 13(4), 1698, p. 2, <https://doi.org/10.3390/su13041698>, <https://www.mdpi.com/2071-1050/13/4/1698>
16. Kırtıl, İ., Aşkun, V. (2021), "Artificial Intelligence in Tourism: A Review and Bibliometrics Research", *Advances in Hospitality and Tourism Research* (AHTR), DOI: 10.30519/ahtr.801690, p. 206, <https://dergipark.org.tr/en/download/article-file/1315726>
17. Medium (2021), <https://medium.com/@Imaginnovation/ai-assistant-the-future-of-travel-tourism-with-emergence-of-artificial-intelligence-f9ea3cad0cc>, accessed in March 2021
18. Nam Kichan & Dutt Christopher S. & Prakash Chathoth & Abdelkader Daghfous & M. Sajid Khan (2020), "The adoption of artificial intelligence and robotics in the hotel industry: prospects and challenges", *Electronic Markets*, p.8, <https://doi.org/10.1007/s12525-020-00442-3>, [https://link.springer-com.am.e-nformation.ro/content/pdf/10.1007/s12525-020-00442-3.pdf](https://link.springer.com.am.e-nformation.ro/content/pdf/10.1007/s12525-020-00442-3.pdf)
19. PWC (2021), <https://www.pwc.com/gx/en/issues/technology/essential-eight-technologies.html>, accessed in February 2021
20. Russell Stuart J. and Norvig Peter (2010), "Artificial Intelligence A Modern Approach" Third Edition, *Prentice hall*, 2010, p. 1, 28-29 <https://cs.calvin.edu/courses/cs/344/kvlinden/resources/AIMA-3rd-edition.pdf>;
21. Verma Indradeep, Krishna K. Rama, Divya Sen, Jyoti Kumari Prasad (2021), "Artificial Intelligence on Future Aspects (How AI Will Impact in 2030)", *Psychology And Education*, 58(2): 401-414, p. 402, 407-410, <http://psychologyandeducation.net/pae/index.php/pae/article/view/1855/1616>

22. WTTC (2021), <https://wtcc.org/Research/Economic-Impact>, accessed in February 2021
23. Zlatanov Sonja, Popesku Jovan (2019), "Current Applications Of Artificial Intelligence In Tourism And Hospitality", *Sinteza*, p.87, <https://doi.org/10.15308/Sinteza-2019-84-90>, <http://portal.sinteza.singidunum.ac.rs/paper/648>

CAPITALIZING THE TOURIST POTENTIAL IN CARAŞ-SEVERIN COUNTY AS A PREMISE FOR REGIONAL ENTREPRENEURIAL DEVELOPMENT

VENERA CRISTINA MANCIU¹, SUZANA DEMYEN²

ABSTRACT. In the context when tourism has become a widespread phenomenon, there are many global concerns in this regard, with reference to the plans to protect the world's cultural and natural assets, and to stimulate the sustainable development of this sector. Touristic, cultural and scientific bodies develop comprehensive strategies, initiating Conventions, drawing up plans and periodically preparing reports. Romania has a large number of tourist attractions, ranking 46th in the top based on this criterion, distinguishing itself also grace to the attractiveness of natural objectives, the total number of protected areas, the number of cultural objectives and the number of objectives in terms of oral and intangible heritage. Taking into account all these indicators, Romania may be proud of a vast touristic potential, which offers wonderful premises for starting a business in tourism, for the expansion of entrepreneurship and for the development of natural, cultural and anthropic resources. Each region and area of Romania has diverse and special particularities and characteristics, and we have to underscore their ability to become true business poles grace to the high level of their attractiveness, being capably of developing actual hospitality industries. The recognition of their existence and value obviously contributes to a very large extent to the promotion and inclusion of cultural objectives into various global rankings, actions that lead to an increased interest among tourists, and implicitly contribute to attracting a large number of visitors and generally have a significant media impact. In this respect, this paper highlights international and domestic coordinates related to the sizing and capitalization of tourism potential, analysing theoretical coordinates

¹ Babeş-Bolyai University, Faculty of Economics and Business Administration, Department of Business Administration – Reşiţa, e-mail: venera.manciu@ubbcluj.ro

² Babeş-Bolyai University, Faculty of Economics and Business Administration, Department of Business Administration – Reşiţa, e-mail: suzana.demyen@ubbcluj.ro

and statistical data. In addition, we also forward the results of a survey carried out in order to identify the prospects for capitalizing on the Romanian tourist heritage and the manner in which the highlighting of the Romanian touristic and cultural objectives can be a starting point for generating prosperous future business and can develop the business milieu in all areas, including in the regions experiencing a steep decline, like Caraș-Severin county.

Key words: touristic sight, tourist attractions, business, hospitality industry, entrepreneurship

JEL: Z32, L26

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Introduction

The development of tourism or, rather, its relaunch, is currently one of the most popular topics in the world, especially in the context in which the Coronavirus pandemic has put on standby much of the activity in this sector. Many regions have suffered the negative effects of the health crisis and the question is how they can be revived and how they can continue to be sustainable, given that an economic recovery in general is both difficult and unpredictable in terms of duration.

Uncertainty is a predominant feeling, a state of affairs that has been induced in the context of recent events, although it is known that Romania has a rich tourist supply, which can list multiple objectives, both natural and anthropic, cultural, spa, religious, mountainous etc.

Adequate development and, moreover, a relaunch after this difficult period of pandemic, would require first of all a thorough knowledge of the resources that can be capitalized, as well as a deep understanding of how they can be highlighted in the most appropriate way, while ensuring

long-term sustainability. Drawing a logical connection between the current state and the objectives to be reached becomes an imperative given that many valuable areas or objectives are currently in an advanced state of degradation, “victims” of the many factors that have contributed over time to the decline of this sector. However, a clear vision is needed in order to ensure an optimal state of health of the tourism sector on the national level, and it is desirable to draw up a realistic and ambitious strategy, as well as a sustainable and coherent action plan.

Theoretical background

Globally, many countries can be successful examples of how to manage and capitalize on resources. They have established for years effective strategies for development (Anghelache et al., 2017) and promotion and the growing number of tourists have established them as representative poles in this field, true “pillars of the economy” (Akrivos et al., 2014). However, the continuous development is the consequence of the implementation of coherent sustainable strategies, implying at the same time the capitalization of the entrepreneurial potential.

The European Union supports these initiatives in the field of tourism, and documents and communications are regularly drawn up by the European Commission promoting strategies to stimulate the “competitiveness of the tourism industry” (2007), as a premise for positive changes in the labour market. There is even talk of a “sustainable tourism” or a “durable tourism”, as they acknowledge “the fundamental role of tourism in the economy of the European Union”. However, on closer inspection, we can see that success in tourism, as well as its competitive and sustainable nature is due in most cases to a mix of elements combined with reason and inspiration, fuelled by both an efficient and lasting planning, as well as the adaptation to the zonal specificity, the capitalization of the opportunities, of the know-how, as well as a strong and continuous promotion. In this respect, according to Eurostat, “competitiveness, sustainability and quality of tourism on the regional and local level” are supported by the European Regional Development Fund.

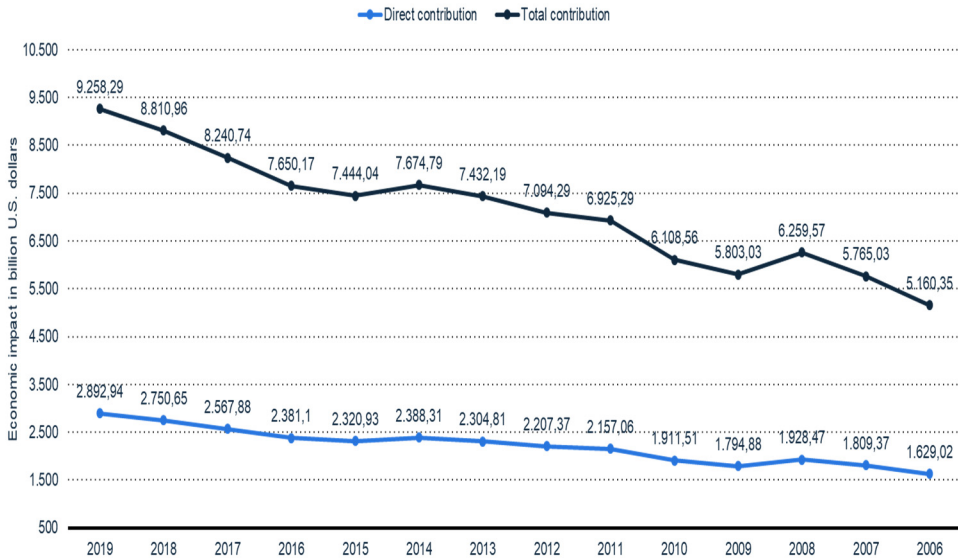


Fig. 1. The direct and total contribution of the tourism sector to the global GDP (billion dollars)

Source: Statista

The positive consequences of the development of the tourism sector cannot be denied, business development in this field bringing “economic benefits for any country” (Biswas & Mamum-Or-Rashid, 2018); in this respect we can study the direct contribution of the tourism sector to GDP worldwide. From the graph above, taken from the Statista database, we can see that over the 2006 - 2019 period the contribution of this industry has increased significantly worldwide, going up from 1629 billion dollars in 2006 to almost 2893 billion dollars in 2019. At the same time, it is an important generator of jobs (Fu et al., 2019), especially in countries that ensure their economic survival with the help of this sector, greatly stimulating the development of small and medium enterprises (Akrivos et al., 2014). The contribution of the latter has also been studied by other authors in the literature, Gregoric & Kovac Pajic (2016) emphasizing the role of SMEs as “generators of entrepreneurial development”, also pointing out the role that investments have in stimulating this- Peters et al (2009) also grant a fundamental character to them, complemented by the approach of Aquino et al. (2018), according to which tourism businesses

acquire “a critical role in delivering desired community development outcomes”, especially in rural areas (Jaafar et al., 2015). Small businesses are also considered a “catalyst” (Chuvakjina et al., 2018) of community forces, as well as a means of capitalizing on resources and transforming them into established tourism products.

Obviously, in the field of tourism there are specific characteristics of entrepreneurship, and we remark also the classic attributes, starting from the importance of correctly identifying opportunities (Shane & Venkataraman, 2015). Forouzandeh et al. (2015) indicate as factors that influence the level of entrepreneurship development: environmental factors, resource management, cultural factors, political, technological, demographic factors, and networking activity. In consideration of all the above, entrepreneurship itself becomes a factor in the sustainable development of tourism, Lordkipanidze et al. (2005) establishing a clear link between these concepts, but nevertheless identifying an opposition position in which the two can be placed.

Globally, tourism is an important economic activity (Sotiriadis, 2018), and the inclusion of monuments and tourist attractions in certain rankings has been a turning point in terms of increasing popularity, bringing along recognition. An increasing number of people have turned into tourist activities the curiosity to find out information about the respective sights, and at the same time boosting entrepreneurship, encouraging the local industries, the manufacture of objects with local specificity, as well as the services sector. Although entrepreneurship in tourism can be perceived as likely to bring about many challenges (Butkouskaya et al., 2020), it acquires a vital role (Jose, 2019), and becomes a driving force in the tourism and hospitality industry, and an important source of jobs (Ciochină et al., n.d.)

In this sense, we can exemplify the UNESCO patrimony, in which Romania also has included a series of objectives, known on the national level, but which, by being included in this list, have benefited from the increase of notoriety also at international level. According to Statista, Romania has currently 8 world heritage sites. The UNESCO website presents the, as follows: the Danube Delta, the Churches of Moldavia, Horezu Monastery, the villages with fortified churches in Transylvania, Dacian fortresses of the Orăştie Mountains, the historic Centre of Sighişoara,

the wooden churches of Maramureș, the ancient and primeval beech forests of the Carpathians. Of these, two are natural and six are cultural sites.

Tourism in Romania can be characterized primarily from the perspective of diversity, being a country with diverse cultural traditions, each area of the country being distinguished by a different specificity. From natural resources, represented by mountains, forests, waters, biodiversity reserves to anthropogenic objectives and monuments, created by man, we can say that Romania is a country with a generous tourist potential, largely undervalued. In addition to the hydrographic network, flora, fauna, spas, mountain resorts, we find monasteries, archaeological sites, cities, buildings that can present to visitors the centuries-old history of our country.

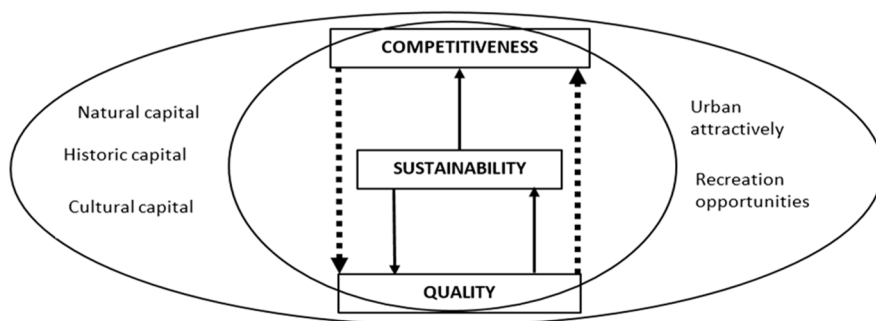


Fig. 2. The relationship between competitiveness, quality and sustainability

Source: Elaborated by the authors, apud to the information provided by Eurostat

According to the Romanian Tourism Development Strategy, the main indicators according underlying the assessment of the activity in the field of tourism in Romania are the number of enterprises in the hotel, accommodation and food sector, the volume of investments made in this field, the number of employees and production value. Croitoru (2011) mentions the importance of calculating an index of competitiveness in tourism, for the determination of which several factors are taken into account, namely: legal regulations in the field of tourism, infrastructure, business environment and resource use (natural, human, cultural), each of these elements subordinating other secondary factors of influence.

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In this regard, The World Economic Forum elaborates The Travel and tourism competitiveness report, which presents first of all a regional analysis and regional profiles, while also creating country/economy profiles. Thus, it is very important to study and asses these findings, in order to objectively identify the real entrepreneurial potential of a country in the field of tourism. For this to be accomplished, we still need a good benchmarking strategy, in order to identify the real value of the local environment and to properly raise awareness of the touristic potential.

According to the report mentioned above, the preservation of natural and cultural resources represents a real “challenge”, that “the industry must overcome” (WEF, 2019). Also, the same source show us that while “the number of UNESCO cultural and natural sites, as well as intangible cultural heritage listings, keeps growing”, it becomes necessary to develop a “greater commitment to preserving some of the key attractions driving people to visit destinations” (WEF, 2019). While studying the individual country/economy profiles, we concluded the following aspects regarding the positions occupied by Romania:

Table 1. Romania – a country profile

	Issue	Rank	Score
1	Overall rank – the travel and tourism competitiveness	56/140	4
2	Subindex A – Enabling environment	51/140	5,2
3	Subindex B – Travel and tourism policy and enabling conditions	64/140	4,5
4	Subindex C – Infrastructure	70/140	3,5
5	Subindex D – Natural and cultural resources	49/140	2,8
6	Pillar 1 – Business environment	76/140	4,4
7	Pillar 2 – Safety and security	29/140	6
8	Pillar 3 – Health and hygiene	36/140	6,1
9	Pillar 4 – Human resources and labour market	73/140	4,5
10	Pillar 5 – ICT Readiness	55/140	5,2
11	Pillar 6 – Prioritization of travel and tourism	101/140	4,1
12	Pillar 7 – International openness	46/140	3,9
13	Pillar 8 – Price competitiveness	51/140	5,6
14	Pillar 9 – Environmental sustainability	48/140	4,4
15	Pillar 10 – Air transport infrastructure	72/140	2,7
16	Pillar 11 – Ground and port infrastructure	83/140	3,1
17	Pillar 12 – Tourist service infrastructure	54/140	4,6
18	Pillar 13 – Natural resources	56/140	3,2
19	Pillar 14 – Cultural resources and business travel	44/140	2,3

Source: World Economic Forum Report, 2019

Thus we can observe that the position occupied by Romania varies depending on the pillar that we analyse. Some positions are very good, indicating a higher level of development, while others can be considered weaknesses and criteria in need for improvement. However, all of these have to be taken into consideration when developing a strategy of entrepreneurial development of a region.

Research methodology

In order to study the respondents' perception regarding the possibilities of capitalizing on the tourist potential in Caraş-Severin county, a research was carried out, having as main tool an online questionnaire. It was applied using a Google Forms template between 05.01-05.02.2021 to a sample of 226 persons residing in Reşiţa, Caraş-Severin county. The distribution of the sample according to the identification criteria is indicated in the following table:

Table 2. The sample of respondents

Criterion	Total number of respondents	Variables	Absolute value	Percentage
Gender	226	Male	42	18%
		Female	185	82%
Age	226	Under 25	38	17%
		25 – 35 years of age	50	22%
		35 – 45 years of age	95	42%
		45 – 55 years of age	38	17%
		Over 55	5	2%
Occupation	226	Pupil / Student	56	25%
		Employee	138	61%
		Unemployed person	27	12%
		Pensioner	5	2%
Studies	226	High school	20	8.85%
		Post-secondary education	12	5.31%
		Higher education	194	85.84%

Source: developed by authors

In the present research, we proposed the following objective:

01 – identifying the respondents level of knowledge towards the touristic potential of Caraş-Severin county

02 – identifying the frequency of touristic activities carried out by respondents

03 - identifying the respondents' perception regarding the places in Caraş-Severin that are most likely to be developed

04 - identifying the respondents' perception regarding the need for a more intense promotion of tourism

05 - identifying the respondents' perception regarding the main aspects in need to be improved.

Results and discussions

The idea of this survey started from a personal research project, ample in terms of directions to be followed, started in the academic year 2020-2021, intended to determine the degree to which Caraş-Severin county can be developed by capitalizing tourist resources. In a previous article (Tănase et al., 2020), the authors pointed out the importance of tourism for the direction of entrepreneurship development in the region, the study focusing in the first phase on arguments in favour of entrepreneurship development in the Danube Straits. Starting from the premises stated in that research, from the conclusions obtained from the centralization and interpretation of the results, and by drawing future research directions, we set out on a longer path in studying this issue, continuing to focus on the manner in which an adequate valorisation of the natural and anthropic resources in the county could contribute to the acquisition of a growing notoriety of this region. In this respect, the hypotheses formulated in the didactic activities helped us to a great extent, by consulting the students and master students in the specialising in business administration, without necessarily formalizing the discussions in the form of focus groups. The outlined ideas materialized in a questionnaire that was applied online, given the limitations imposed by the COVID-19 crisis, the questions urged respondents to identify the extent to which they share our perception of the real potential of the county.

As only a local popularization in the media often proves inefficient and taking as examples of good practice other countries, we considered it appropriate to debate the idea that the county would benefit from greater notoriety if some of the tourist attractions would gain an international recognition, being included in the UNESCO patrimony for instance.

From this perspective we have found that not all of the respondents are familiar with these international classifications. Therefore, if such a recommendation were to be applied in practice, future strategies should focus in part on “educating” the consumer of tourism products, updating existing information and bridging all possible gaps in knowledge. Most respondents, although not strangers to concepts such as “UNESCO monument” or “UNESCO heritage”, do not have a broad set of knowledge in this regard. 35% of respondents indicate an average level of knowledge on this issue, while the opinions of others are divided. Whereas about 38% consider that they have information to a high and to a very high extent regarding the international rankings in the field of tourism, being at the same time concerned or even passionate about travel, a significant segment of people, namely about 27% of the total have not heard at all about these issues or have only minimal knowledge in this regard. However, in order to be able to present a clearer picture of the answers provided, it is necessary to study the level of representativeness of the answers given by the subjects. Thus, when it comes to the first question, we can calculate, based on the available data, an average level of representativeness, indicated by the coefficient of variation, which has according to the table below, the value 43.59%, which shows a relative degree of homogeneity.

On the national level, as it results from reports and specialized studies, there are various areas that have managed to stand out by inclusion in such rankings. In this regard, the respondents were asked if on the national level they have knowledge about such tourist attractions, which an international recognition has helped contribute to a positive evolution of their area. This question came as a natural continuation of the previous one, and the answers provided by the subjects only strengthen the belief that most regions are in dire need of continuous promotion even on the national level, especially since the level of popularity is not high enough. A significant percentage of respondents (about 23%) have

no knowledge of sights included in international rankings, while over 75% have partial knowledge and could, according to their own statements, provide at least one such example, and a very low percentage, only 2%, consider themselves specialists in the field, being able to indicate most of the Romanian tourist objectives listed in international rankings. Even if, at least partially, the names of the objectives in Caraș-Severin county are known to them, the respondents do not have knowledge regarding the inclusion of any of them in the international tops or rankings.

The tourist activity of the respondents is quite low, especially in the context of the last year, which has greatly limited travel. However, in terms of the volume of this activity, we find that respondents make time at least for weekend trips, occasionally. A very small percentage indicates actions of visiting the tourist objectives in Caraș-Severin county monthly (10%) or several times a year. This may be due, as mentioned earlier, to the difficult situation created by the context of COVID 19, which made it difficult to initiate holidays and other trips, and in providing answers, respondents referred in particular to the experiences of the last year. However, a percentage of about 58% of respondents declare at least one trip to the county during the last 12 months.

It is a known fact that the county cannot develop all its areas equally at the same time. There are differences between the mountain area, respectively the Danube Shore (*Clisură*) area or the Băile Herculane Spa area. Each of them exhibits a different degree of evolution, depending on the concerns of the authorities, respectively on the entrepreneurial initiatives that have materialized in more successful or less successful projects, over the last years. There are many voices claiming that the county, through its natural and anthropogenic tourist objectives, could be a major competitor among other regions of the country, if the opportunities were properly exploited. We were therefore curious to find out which of the three areas mentioned is considered to have a greater potential for development in the future. In this sense, the mountain area was preferred by most subjects, Semenice and Little Mountain (*Muntele Mic*) areas being selected by about 56% of respondents, while 41% opted for the Danube Straits area, only 3% declaring a high level of optimism regarding the spa part of the county, namely Băile Herculane. Of course, this short survey on the location most likely to be developed is not a sufficient argument to support one direction of development or another, but it highlights

the current perception of potential tourists. Also, in order to get the big picture, the study could be completed in the future with other regions in Caraș-Severin, namely those that represent the part of nature reserves or urban tourism.

On a Likert scale from 1 to 5, regarding the need to implement much more solid promotional actions, with national and international dissemination, the majority of respondents (about 80%) agree with the idea of the need for active campaigns in this regard, granting scores of 4 and 5 and identifying an increased degree of this need on the county level. Only a small percentage, i.e. 14%, consider this aspect of medium importance, and the remaining almost 6% grant it a low or very low significance, assessing it with 1 and 2. From this point of view, we find an increased level of representativeness of the answers offered by the subjects, the value of 21.45% of the variation coefficient showing a high level of answers homogeneity. Consequently, in this respect a more active promotion strategy is required, so that the tourist sights in our county could acquire their deserved recognition, both nationally and internationally.

However, we cannot ignore some of the critical nature of the answers provided by respondents. In order to be able to promote the area beyond the mere existence of these objectives, it is important to ensure the most appropriate access conditions, which are currently lacking on the whole. The quality of infrastructure has been much discussed over the years, often being blamed for attracting a too low number of tourists. Being asked to evaluate this criterion, the respondents had divided opinions, so we could identify positive opinions, as well as some less or not at all favourable. However, the percentage of those who consider the infrastructure to be satisfactory to a high extent remains quite low. Thus, out of the 226 respondents, on a scale from 1 to 5, only 3.1% assign it a maximum score, appreciating the infrastructure as very good. In addition, about 17.7% of respondents indicate a good quality for it, and most respondents tend to indicate an average level (45.57%). The remaining 33.63% of respondents mention a low level of infrastructure quality, scoring this criterion by 1 and 2 points. We must also mention in this respect the homogeneous nature of the answers given, deduced after calculating the variation coefficient, which at this point has a value of 32.24%, again indicating the representativeness of the answers given by the subjects.

The tourism development strategy must thus necessarily include concrete, clear provisions regarding the rehabilitation of the access infrastructure to the tourist objectives, as long as this aspect is vital and can greatly influence the opinion of tourists about a certain area.

The fact that until recently there had been no special concerns for ensuring a progress of Caraș-Severin county in terms of tourism led to the neglect of infrastructure issues, postponed or even forgotten, which, as a direct consequence, has led to the impossibility adequate capitalization of some areas. We were interested in whether the respondents consider that in Caraș-Severin county we have or not undervalued or underutilized areas, precisely in order to be able to create the premise according to which an inclusion in the international classifications proved to be beneficial. Thus, the respondents are not at all satisfied with the degree of capitalization of the existing potential, stating that there is room for improvement, especially in certain situations. The tourist sight considered by the respondents as the least capitalized at its fair value is considered to be Băile Herculane Spa, a resort currently in an advanced state of physical degradation and forgotten at the same time by the national tourist map. Although the history of the resort is impressive, dating back hundreds of years and being compared to the resort of Karlovy Vary in the Czech Republic, the current state has led to its oblivion both in terms of tourism and economy, rehabilitation projects being insufficient and / or inefficient. A revitalization of the area could include, beyond the physical restoration of buildings and the historical restoration of the resort, bringing its potential to its fair value, creating a story, a framework meant to contribute to the sale of tourism and more active and fair media coverage.

Respondents demonstrate an increased level of receptivity to tourism in Caraș-Severin county. However, their interest could be actively stimulated if, in addition to improving the quality of infrastructure, entrepreneurship development strategies on the county level would consider, on the one hand: the creation of a framework meant to ensure easier access to the major tourist sight, the diversification of the forms of tourism practiced, from gastronomic to religious, ethnic or adventure tourism, the practice of pricing policies accessible to all categories of customers. Asked what are the main factors that would direct them to our county to the detriment of other areas of the country, respondents

did not hesitate to mention the attractiveness of sights, namely the diversity and quality of traditional dishes, which can be capitalized through successful entrepreneurial initiatives.

We must not forget that worldwide tourism is seen as an engine of the economy, playing an active role in regional development. So what would prevent Caraş-Severin county from becoming an example of good practice in this regard? Although industry has been the basis of the county's development in the past, can tourism become a foundation for future development?

Attachment to the idea of home would cause a large number of respondents to recommend acquaintances to visit Caraş-Severin county. The percentage of those who share this opinion is high - over 85%.

And even though we concluded at the beginning of the study that a relatively low number of respondents have knowledge of international landmark assessment rankings, a significant number of respondents say they would recommend that landmarks be included in various rankings or even UNESCO heritage if this would bring benefits on multiple levels. Over 75% of the subjects would make such a recommendation, considering that at present most of the areas in the county are not properly known or exploited. And what is partly a paradox due to the advanced degree of degradation, although from the perspective of the historical past is not a surprise, in a top of the objectives worthy of inclusion in the UNESCO list they ranked first Băile Herculane resort, for which such a distinction can contribute in the future to a clarification of the destiny of the resort, and to its complete rebirth. Also among the most valuable anthropic resources they mentioned the Anina - Oravița railway, considered a treasure of the county.

On a scale from 1 to 5, the respondents were asked to what extent a suitable marketing, along with a distinction of inclusion in the UNESCO patrimony would influence their decision to visit the county more often. In this respect, the opinions were mostly favourable, almost 50 of the respondents stating that these elements would determine them to promote, in their turn, tourism in Caraş-Severin to a higher extent. A similar percentage indicates a strong intensity of this desire, very few respondents declaring a contrary opinion. It seems, therefore, that inclusion in international rankings would also show effects in

terms of popularity of targets. However, the respondents also formulate a series of expectations in terms of infrastructure, the adaptation of the entrepreneurial activity to the needs of the tourists, the increase of the quality of the services etc.

The calculations related to the statistical verification of representativeness are detailed in the table below:

Table 3. Statistical verification of representativeness

Criterion	Total number	Minimum	Maximum	Mean	Dispersion	Standard deviation	Variation coefficient
Level of knowledge on inclusion in the rankings	226	1	5	3.19	1.9339	1.3906	43.59%
Need for more active promotion	226	1	5	4.18	0.8061	0.8978	21.45%
Quality of infrastructure	226	1	5	2.86	0.85108	0.9225	32.24%

Source: calculations made by authors

CONCLUSIONS

Regarding the answers provided by the respondents, we notice that the opinions and results vary depending on the question asked, respectively on the level of knowledge regarding a certain topic. For the questions to which the answers were offered using Likert's scale, we could also calculate the indicators of variation, to check if the answers offered are representative and if the results could be generalized to a larger population.

In this sense, regarding the three items specified in the table above, we note that a higher level of homogeneity is registered in the case of answers aimed at the need for a more active promotion of tourism in the county, respectively the need to develop infrastructure quality, as a support for a future development of entrepreneurship in the county. We observe relative homogeneity in the case of the question aimed at identifying the level of knowledge regarding the inclusion in various rankings.

It is a recognized fact that the main premise for a future sustainable development is represented by the identification, knowledge and capitalization of the real tourist potential, to these being added the capacity to initially outline a coherent strategy at county level, respectively at individual level. Thus, it becomes essential to correctly identify the opportunities, to correlate the activities in time, in the spirit of capitalizing on the regional potential, all of these being important considering the fact that the development of entrepreneurship in tourism brings numerous advantages, of which we can mention the creation of new jobs, developing a higher level of national and international awareness and increasing the popularity of local brands.

Caraș-Severin is a county with great potential. It is up to us to decide how we chose to capitalize it.

REFERENCES

1. Akrivos, C., Reklitis, P., Theodoroyiani, M., (2014), Tourism entrepreneurship and the adoption of sustainable resources. The case of Evritania Prefecture, ICSIM, *Procedia Social and Behavioral Sciences*, 148, 378-382
2. Anghelache, C., Anghel, M.-G., Lilea, F.P.C., Burea, D., Avram, D., European Union strategy for the development of industry, trade and tourism (in original in Romanian), *Romanian Statistical Review – Supplement*, no. 8/2017, 130-144
3. Aquino, R., Luck, M., Schanzel, H., (2018), A conceptual framework of tourism social entrepreneurship for sustainable community development, *Journal of Hospitality and Tourism Management*, 37, 23-32, available online at <https://www.sciencedirect.com/science/article/abs/pii/S1447677018300925?via%3Dihub>
4. Biswas, C., Mamun-Or-Rashid, M., (2018), The role of tourism entrepreneurship businesses in the economic development: an overview, *International Journal of Business and Entrepreneurship*, 8(2), 167-176
5. Butkouskaya, V., Romagosa, F., Noguera, M., (2020), Obstacles to sustainable entrepreneurship amongst tourism students: a gender comparison, *Sustainability*, 12,1812, doi:10.3390/su12051812
6. Ciochină, I., Iordache, C.M., Sîrbu, A., (n.d.) Entrepreneurship in the tourism and hospitality industry, *Managerial Strategies Journal*, available online at <http://www.strategiimanageriale.ro/papers/160136.pdf>

7. Croitoru, M., (2011), Competitiveness index in tourism - empirical analysis Romania vs. Bulgaria (in original in Romanian), *Theoretical and Applied Economics*, vol. XVIII, no. 9 (562), 110-128
8. Forouzandeh, M., Safahani, N., Fakhrabadi, M.K., (2015), Factors affecting entrepreneurship: tourism development and sustainable tourism industry, *International Journal of Modern Management and Foresight*, 2(2), 65-76
9. Fu, H., Okumus, F., Wu, K., Koseoglu, M.A., (2019), The entrepreneurship research in hospitality and tourism, *International Journal of Hospitality Management*, 78, 1-12
10. Gregoric, M., Kovac Pajic, A., (2016), The impact of small and medium entrepreneurship on tourism development in the Republic of Croatia, *Journal of Business Paradigms*, 1(1), 85-94
11. Jaafar, M., Rasoolimanesh, S. M., Lonik, K. A. T. (2015), Tourism growth and entrepreneurship: Empirical analysis of development of rural highlands, *Tourism Management Perspectives*, 14, 17-24 <https://doi.org/10.1016/j.tmp.2015.02.001>
12. Jose, S., (2019), Entrepreneurship “a boon or bane” in tourism industry, *Journal of Business and Management*, 21(1), ser. II, 82-86
13. Lordkipanidze, M., Brezet, H., Backman, M., (2005), The entrepreneurship factor in sustainable tourism development, *Journal of Clear Production*, 13, 787-798
14. Peters, M., Frehse, J., Buhalis, D., (2009), The importance of lifestyle entrepreneurship: a conceptual study of the tourism industry, *Revista de Turismo y Patrimonio Cultural*, 7(2), 393-405
15. Shane, S., Venkataraman, S., (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25, 217–226.
16. Sotiriadis, M., (2018), The Emerald Handbook of entrepreneurship in tourism, travel and hospitality: skills for successful ventures, Emerald Publishing
17. Tănase, A-C., Tănase, F-D., Demyen, S., (2020), Tourism entrepreneurship in the Danube Shore (Clisura Dunării) – potential and prospects, in 5th International Thematic Monograph *Modern Management Tools and Economy of Tourism Sector in Present Era*, Vuk, B. & Snezana, S. (eds), Belgrade 2020, 253-270, DOI: <https://doi.org/10.31410/tmt.2020.253>
18. *** Commission of the European Communities, Agenda for a sustainable and competitive European tourism (in original in Romanian), Commission Communication, Bruxelles, 19.10.2007

19. Romania National Tourism Development Strategy 2019 – 2030 volume 1: sector rapid assessment report, Bucharest, 2018, available at:
<http://b2b-strategy.ro/b2b/wp-content/uploads/Strategia-na%C8%9Bional%C4%83-a-Rom%C3%A2niei-pentru-dezvoltarea-turismului-Volumul-1.pdf>
20. World Economic Forum, The travel and tourism competitiveness report. Travel and tourism at a tipping point, 2019, available online at:
http://www3.weforum.org/docs/WEF_TTCR_2019.pdf
21. http://ec.europa.eu/enterprise/services/tourism/tourism_sustainability_group.htm
22. <https://whc.unesco.org/en/list/?search=romania&order=country>

ASSESSING COMPETITIVENESS IN AGRIBUSINESSES. THE CASE OF HOLIV ECOPLANT

HORAȚIU OLIVIU BUZGĂU¹, SMARANDA ADINA COSMA²

ABSTRACT. The strategic position of the agriculture is the result of ensuring the necessary food, health, life. Agribusiness is refereeing to the mutuality between water, air, land, subsoil resources, and more and more efficient technologies. The increasing demands for agricultural products require firm's competitiveness. The perpetual change of the environment determines agribusinesses to identify and focus on their competitive advantages. This topic becomes an important research area in business strategy. The paper analyses the particularities of the agribusiness ecosystem. The principal purpose of the research is to identify the competitiveness vectors for Romanian agribusiness firms and to determine firm level competitive advantages. An exploratory research was performed using secondary data analysis for marketing macro environment analysis and the case study method to formulate strategies and tactics for improving competitiveness and performance of agribusiness firms. The case of Agrind SA and Holiv Ecoplant is considered, and the competitiveness polygon is developed as an instrument to formulate positioning strategy.

Keywords: agribusiness, competitiveness, competitiveness polygon

JEL classification: M31, Q13

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¹ Master Student, Faculty of Business, e-mail: horatiu.buzgau@stud.ubbcluj.ro

² Prof. PhD, Faculty of Business, e-mail: smaranda.cosma@ubbcluj.ro

Introduction and brief review of literature

The resources that mankind possesses are indispensable, vital elements in ensuring our existence and evolution from all points of view. One ancient activity that satisfies an elementary, basic human need is agriculture. With deep roots in history and tradition, regardless of nationality or culture, the agricultural field has been, is and will always be current. Its strategic positioning is explained by the need to ensure the necessary food, health, and life. The perfect symbiosis between water, air, land, subsoil resources, on the one hand, together with more and more efficient technologies on the other, creates what we now call agribusiness. The entire farm-to-fork process is included in this concept.

The term agribusiness was born in 1957 by combining the words “agriculture” and “business” (Davis & Goldberg, 1957) which outlined a completely new philosophy towards agriculture, representing “the sum of all agricultural operations, plus the manufacture and distribution of agricultural goods. Agribusiness refers to the sum of all operations involved in the production and distribution of food” (Davis, 1955). A more complex definition was later given, stating that it represents “the sum of all operations involved in the manufacture and distribution of agricultural goods, namely the storage, processing and distribution of finished goods and products” (Davis, 1956; David & Goldberg, 1957). In 1974, Goldberg extended the meaning of the term to a “system for the agri-food industry” (Goldberg, 1974). Evolutionary, the definitions have been more and more elaborate and more and more complexes, to such an extent that agribusiness now represents “all the businesses and activities carried out by companies supplying agricultural inputs, producers of raw materials and processors, transporters, as well as the trade of agricultural products” (Downey & Erickson, 1987). Subsequently, “storage, wholesale and retail” became a research topic (Chait, 2014). In recent years, the focus has been moved on the business size, with smaller businesses, such as family farms, now coming in second (Fleet, 2016). However, there is increasing concern of certain forms of associations, which, by joining forces can contribute to increased economy of scale. The significance of this complex term is synonymous with the future, and the agribusiness industry will not disappear if there is at least one man left on the Earth. Regardless of the changes and challenges that this field is facing now and will be facing in the future, innovation and creativity remain the driving forces.

The components of the agribusiness field and the relationships between members are presented in Figure 1. In the centre of the system are the final consumers, and the forces that interfere to satisfy them are the sector that deals with the supply of agricultural inputs (Agricultural Input Sector), the sector in charge of production (Food Production Sector) and the sector tasked with processing (Manufacturing and Processing Sector), the last two being intertwined through marketing.

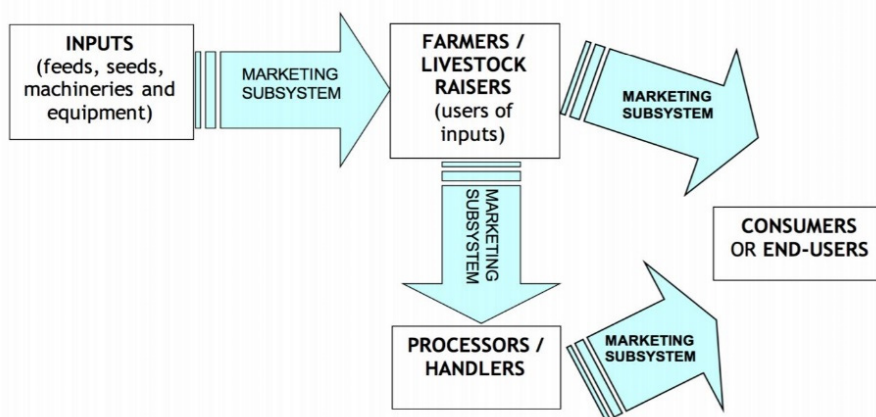


Figure 1. Relationships in the agribusiness sector

Source: Hassanzoy (2019)

The main component of any process is the input (Inputs; what goes into that process), in this case being: seeds, machines and equipment, land, people. The second pillar is represented by the users of input (Farmers; farmers/cultivators), which have two options: either sell their product (goods) to the end-users or capitalize on it (this time in the form raw material) towards Processors/ Handlers. The afore mentioned are those who add value to the work provided by the users of input, and subsequently trade to meet the demand of end-users. The basis of all these transfers is, unequivocally, the marketing subsystem.

The growing demands for agricultural products require firm's competitiveness in the agribusiness sector. The continuous changes and dynamics of the environment determine agribusiness companies to identify their competitive advantages and in this respect the topic become an important research area in business strategy.

The paper analyses the particularities of the agribusiness ecosystem. The main purpose of the research is to identify the competitiveness vectors for Romanian agribusiness firms and to determine firm level competitive advantages.

The specific competitive advantages to agribusiness sector have been analysed from different perspectives, invoking a series of aspects specific to certain countries. Previous studies capitalized on various regional features and competitive advantages like the cultivation and processing of certain products or business strategies in line with one's own culture. The magnitude of the exploitation, the capitalization it benefits from, the sustainability that characterizes it, as well as the collective actions in which it is engaged are the guidelines included in several studies (Sachitra & Chong, 2016; Sachitra, 2017; Molema et al., 2016; Rooyen & Boonzaaier, 2016). The authors retain and adapt these identified competitive advantages as pillars of competitiveness development for the four entities under analysis.

Methodology

For marketing macro environment analysis, an exploratory research was performed. The study used secondary data analysis and comparative analysis. The case study method was useful to formulate strategies and tactics for improving competitiveness and performance of agribusiness firms. To perform a more complex analysis of the examined companies, the data were extracted from the annual financial statements related to 2019. The case of Agrind SA and Holiv Ecoplant was especially considered in the present study.

The competitiveness polygon was developed as an instrument to formulate positioning strategy. To achieve the research objectives, in accordance with Sachitra & Chong (2016), the present paper chooses the following factors that determine the competitive advantages of agribusiness companies: the size of the holding, its capital (technology, human resources, know-how, etc.), the collective actions in which the company is involved (cooperatives, associations), as well as sustainability (from the point of view of environmentally friendly policies and alternative energy sources). For measurements, a scale of 1 to 4 was implemented, where 1 represents a very good score and 4 – a very poor score.

Agribusiness ecosystem particularities

Regardless of the activity undertaken, the branch to which it belongs or the context in which it operates, any entity is directly influenced by the business ecosystem of which it is part of. The components of the environment can either be challenges or opportunities, and the difference in the approach is manifested in the ability of each entity to use each situation to their benefit or detriment. The factors in this category cannot be influenced by the company to a significant degree, instead they impact the company's activity, and for this reason they must be carefully monitored.

The final product resulting from these processes, which fall within the coverage area of the agribusiness sector, for the most part, satisfy the basic physiological needs of the population. Product that has not undergone any processing (e.g., animal feed) can reach end-users too. Considering all these aspects it can be concluded that the entire population of a given area is part of the demographic environment. Regarding the labour source that is indispensable for the development and continuity of economic activity, there is a minimum condition of specialization (especially from a technical point of view, both in production and in processing, marketing), as such there must exist certain criteria when it comes to recruitment and team cooperation (Țimiraș, 2017).

After the analysis of the demographic component, a key role at the macro-environment level is played by the economic factors. If before was considered the demand that is stimulated by the population (those who form the demographic environment), the economic environment represents the context in which that demand is doubled by the possibility of purchasing goods (purchasing power). Beyond need and desire, there must also be the meeting of certain needs.

Gross domestic product (GDP), inflation rate, unemployment level, or trade balance are just some of the indicators that give off various signals about this economic component (Armstrong et al., 2018). It must not be neglected the subsidies that appear in the agricultural sector, as they focus on the production side. The trend of recent years has been to stimulate ecologically certified crops, precisely to arouse greater interest in this niche market. At the same time, European programs run through the Romania's Agency for Rural Investment Financing (AFIR) encourage investment in

the production and processing of agricultural products, with a vision to co-establish integrated chains. The financing of up to 90% of the value (excluding VAT) of investments can be obtained on the various sub-measures launched for the public. This way, the Common Agricultural Policy in the coming years, which is hotly debated in the European Commission, aims to organically exploit about 25% of the area by 2030 (a change in the ratio between conventional and organic crops).

Finally, the programs launched by the Government to stimulate the creation and development of businesses must be considered. Whether we are talking about Start-up Nation, or the various programs aimed at awarding non-refundable amounts, they are all important factors that must help companies to progress.

Being in continuous change and development, characterized by a certain dynamic quality, the technological environment represents innovation and progress. By a simple review, it can be observed a different perspective nowadays compared to previous years, not to mention the '90s or 2000s. At the level of the agricultural sector, it can be observed, at the production level (machinery and equipment) at the processing level (advanced lines and equipment for transforming raw materials into products that meet the needs of final consumers) or at the level of the management of entities (planning and internal management programs, accounting software, etc.) visible and extremely useful changes to achieve increased efficiencies or higher yields. The departments in charge of research and development at the technological level are the engine that sustains all this ample evolution. The trends are changing and consumer demands, especially on quality, are rising. To cope with these transformations, entities need to align and invest in various studies to ensure that they understand the real needs of potential customers, and then direct their steps towards investments that facilitate as efficiently as possible the achievement of the objectives pursued.

Regarding new production technologies (aimed at ecologically certified crops), investments in high-performance machinery are being made to replace the use of chemicals by mechanical work (for example, a machine has recently been launched to control weeds by a system of the basis of the water jet, thus replacing the chemicals used in conventional systems). Progress without technology cannot exist, sustainable and continuous development being fuelled by technological innovations.

The traditions and historical heritage of people take long to change, ultimately coming down to the mentality of the people or the way in which they relate to what surrounds them. Innovation can sometimes be delayed due to psychological barriers sustained by certain ancestral habits and norms, but a clear technological superiority can exacerbate this obstacle.

As far as internationalization is concerned, there may be certain characteristics of the cultural environment that are common to several peoples (having common roots or similar outlooks), so entering these markets may be easier. Strategies related to the components of the marketing mix can be significantly influenced by the culture, adapting to them according to each specific group being of utmost importance.

Beyond the production processes specific to the agricultural field, when talking about processing the recipes used (especially if the export is targeted) or the distribution channels that may vary depending on the area that is targeted for the sale of goods need careful attention.

The political and legal environment is the one that outlines the rules of the game. Knowledge of the legal framework is imperative, especially when it comes to catering to the public. All provisions required by the Veterinary Sanitary and Food Safety Directorates (DSVSA), the Public Health Directorate (DSP), Consumer Protection, the County Directorate for Agriculture (DJA), the Territorial Inspectorate for Seed and Planting Quality (ITCSMS), the Territorial Labour Inspectorate (ITM), the Agency for Payments and Interventions in Agriculture (APIA), the National Agency for Fiscal Administration (ANAF) and other institutions that are directly involved in this vast process, must be strictly monitored and carefully implemented for a healthy evolution. The activity of a company can be supported or even hindered by the legislation valid on the territory of a country, at the level of the European Union or even at a globally.

The new trends related to the ecological regime get special treatment from a legal point of view as well. Starting with the preparation of the land, the sowing-maintenance-harvesting of crops, then the storage-processing-marketing of the products are rigorously presented in the content of the laws aimed at this activity (Dobrescu, 2019).

Both the climate and the resources of the soil and subsoil are extremely important, even decisive factors when it comes to establishing agricultural crops. When the entity must decide the path to follow, the impact of the natural environment is significant, often requiring a backup plan (e.g., irrigation systems to compensate for lack of rainfall, natural fertilizers to increase soil fertility, various land improvements, efforts made to reintroduce non-productive areas into the agricultural circuit, etc.).

After Romania's accession to the European Union, the opportunities for internationalization multiplied and so have a series of challenges.

The association of entities implies increased stability, increased bargaining power, and better security, in other words it stimulates the growth of general well-being. There are various forms through which this approach can be achieved: associations, cooperatives, clusters, producer groups, etc. According to Ordinance No. 26 / 30.01.2020 regarding associations and foundations, an association is defined as "the subject of law constituted by three or more persons who, based on an agreement, share without right of restitution the material contribution, knowledge or their contribution to work for the performance of activities in the general interest of certain communities or, as the case may be, in their personal non-patrimonial interest". Being supported by the Law no. 1/2005 on the organization and functioning of the cooperation (Chapter I, Art. 7, paragraph 1), the cooperative society is "an autonomous association of natural and/or legal persons, as the case may be, constituted on the basis of the free consent expressed by them, in order to promote the economic, social and cultural interests of the cooperating members, being jointly owned and democratically controlled by its members, in accordance with the cooperative principles". Another possibility of association is represented by the clusters, the term being intensely promoted by Michel Porter since 1990. More precisely, according to Porter's concept, a business cluster represents a certain location, in which a series of skills and resources are accumulated, all this giving the area a privileged status in a certain sector of activity and of course a competitive advantage worthy of consideration (Porter, 1990). Also, associations that aim to capitalize on their members' production and comply with certain requirements imposed by the legal framework, may take the form of producer groups (the legal framework being established in the content of Ordinance No. 37/2005 on recognition and operation of producer groups for marketing agricultural product as well as forestry).

Even if there have been various suspicions about the forms and roles of associations as well as member benefits in Romania in recent decades, the reality shows the opposite, several benefits being: European funding aimed exclusively at associational forms, obtaining higher discounts (given the fact that higher volumes are purchased), capitalization at better prices of production, efficiency by operating better equipment, investment in storage space, the propensity to process agricultural products, and last but not least, openness to international markets.

In the new funding cycle (2021-2027), the programs launched at the level of the European Union have established a series of priorities regarding the stimulation of the establishment of associative forms, generating in this sense sub-measures of financing that aim exclusively at this. Moreover, the processing of production begins to become attractive as the quantity (raw materials held and/or purchased) that is to enter the flow increases (thus stimulating the emergence of economies of scale).

Depending on each specific case, the decision can be made to opt for one of the forms of association presented above, their contribution being visible in the development and diversification of business (especially small businesses, but not only).

The main players in agribusiness

“Agriculture is and will remain one of the engines of economic growth in Romania, and companies in the field circulate large sums every year,” says an article published by Wall-Street in September 2019. At the Agribusiness conference in 2019, organized by *Ziarul Financiar*, a series of prominent representatives of this branch were present, all concluding that “association is the key to the development of Romanian farms, and processing is the only generator of added value in GDP”. Therefore strong, competitive agribusiness is a driving factor for success.

The international landscape specific to agribusiness is a dynamic one, the first ten companies that make up the ranking (top 10) in 2018 have reached a very high level of turnover. The giants that operate in this industry worldwide, have done various collaborations and partnerships in Romania, their partners being those who stay on top nationally. Considering the turnover registered in 2018 as a benchmark, the situation is the following:

Table 1. Largest agricultural firms (internationally)

Position	Company name	Country	Turnover 2018
1	Cargill	USA	114,7 billion \$
2	DowDuPont	USA	85,9 billion \$
3	Archer Daniels Midland Company	USA	64,3 billion \$
4	Bayer AG	Germany	46,7 billion \$
5	Deere & Company	USA	38,4 billion \$
6	CNH Industrial NV	Netherlands	29,7 billion \$
7	Nutrien (Formerly Agrium Inc. in Potash Corp)	Canada	19,6 billion \$
8	Syngenta AG	Switzerland	13,5 billion \$
9	Yara International	Norway	12,9 billion \$
10	BASF	Germany	6,8 billion \$

Source: Top Ten Agribusiness Companies in the World (*Tharawat* magazine)

At a national level, depending on the turnover that the companies achieved in 2018, the situation is presented in Table 2:

Table 2. Largest agricultural companies (nationally)

Position	Company name	County	Turnover 2018	Turnover 2017
1	Smithfield	Timiș	868,3 mil. lei	920 mil. lei
2	Promat Comimpex	Satu Mare	714,8 mil. lei	541 mil. lei
3	Agro-Chirnogi	Călărași	698 mil. lei	880 mil. lei
4	Transavia	Alba	597,8 mil. lei	531,5 mil. lei
5	Plantagro Com	Vaslui	450,7 mil. lei	439,7 mil. lei
6	Agricost	Brăila	375,4 mil. lei	360 mil. lei
7	Avicola Buzău	Buzău	261,8 mil. lei	264,3 mil. lei
8	Agrisol International	Prahova	313,3 mil. lei	291,6 mil. lei
9	Pioneer	Ilfov	253,3 mil. lei	268 mil. lei
10	Agrinvest	Buzău	250 mil. lei	274 mil. lei

Source: Agriculture to report: top 10 largest companies in the agricultural sector (Wall-Street)

The Wall-Street publication states that “Smithfield Food Inc., owned by the Chinese group WH, the world’s largest supplier of pork, is a leader among agricultural companies”. The article also shows that one of the largest distributors of fertilizers, pesticides, and seeds in Romania,

Promat Comimpex, ranks second nationally in the agricultural sector. In the next place sits Agro-Chirnogi, an entity with activity in the field of oilseed plants. The same source places the well-known chicken producer, Transavia, on the fourth position in the hierarchy, this company being the largest employer in agriculture (at the time having an average number of 1535 employees). The Vaslui company, Plantagro Com, with activity in the oilseeds sector, “counts among its activities the provision of inputs and specialized technical assistance, until the collection of the harvest” shows the Wall-Street analysis, thus placing the company on the 5th place. Agricost is “the largest cereals and oilseeds farm in Romania in terms of area of cultivation (exploiting 56,000ha in the Big Island of Brăila), this occupies only the sixth position according to the turnover. The ranking continues with Avicola Buzău, the producer of poultry and poultry-related items that is controlled by the Aaylex Trading group of companies. “The top of the largest companies in agriculture is also completed by the poultry producer Agrisol International, ranked the eighth”, claims the quoted source. Pioneer Hi-Bred International is “one of the first American companies to bring genetically modified seeds to Romania”, and depending on the turnover it registered in 2018, it takes 9th place in this hierarchy. The last position is held by Agrinvest, a company active in the cultivation of cereals in Buzau County.

Considering the level of Satu Mare County, the study ranked the following companies:

Table 3. The largest agricultural companies (at the level of Satu Mare County)

Position	Company name	Turnover 2019	Turnover 2018
1	Promat Comimpex	775,4 mil. lei	714,8 mil. lei
2	SchwabAgro Prod	220,9 mil. lei	215,4 mil. lei
3	Medeea Agro Prod	205,5 mil. lei	183,6 mil. lei
4	Agrind Group	32,6 mil lei	24 mil. lei
5	Veres Agro Prod Com	31,9 mil. lei	18,6 mil. lei
6	Agro Radu	28,2 mil. lei	31,4 mil. lei
7	Sampax	25,4 mil. lei	25,3 mil. lei
8	Agromexim	25,3 mil. lei	28,9 mil. lei
9	Agronor	24,4 mil. lei	20,9 mil. lei
10	Pro Avis	16,5 mil. lei	19,6 mil. lei

Source: Own projection based on the annual financial statements submitted to the Ministry of Public Finance

Analysing the situation in Satu Mare County, it easily can be noticed the much smaller scope that is characteristic of these companies. The company that leads the top at the local level, Promat Comimpex, occupies the second position at the national level, enjoying constant growth based on investments and acquisitions of other smaller companies. The rest of the companies rely primarily on the production side (especially cereals), but in some places they extend to the zootechnical sector (pigs, birds, cattle). The increase of the added value through processing is not very developed, but by attracting European funds and/or various associations, this important branch of agribusiness may represent a different dynamic.

As is the case with any activity, the competitive advantages enjoyed by each protagonist of this landscape is very important, in other words the strengths that differentiate and propel it over the others. When talking about Veres Agro Prod Com, Agrind Group or Pro Avis, both the capitalization on cereals by transforming them into fodder, and then using them to supply pig farms (the first company) are present; the grinding of wheat (at its own mill), and then the use of flour in order to obtain bakery and pastry products (at the company's bakery), as well as the raising of cattle for meat and milk, the food being produced domestically (through a second company); and lastly poultry farming and the marketing of eggs. Animal husbandry, the provision of agricultural inputs, as well as the collection-transport-storage part, and sometimes even the export of cereals, fall on those who want to increase their revenues, to expand, to strive for geometric growth. The indirect appeal to the delimitation of traditional/ linear growth and the approach to geometric growth is not a coincidence, on the contrary, it is one of the secrets of faster evolution (through mergers and acquisitions; diversification of activity; coagulation of an integrated chain, having the effect of reducing losses and increasing efficiency, etc.).

Moving from the local level to the national level, the research reveals large market movements, the change of shareholding, the retreat and rethinking of the balance of power in a competitive and growing economy (even if against the background of the pandemic generated by the new Coronavirus business environment, the industry specific to agribusiness has maintained its trend, through extensive changes to achieve the predetermined objectives). A conclusive example in this

regard would be that of Agricovert, known as an important player in the distribution of agricultural inputs, which had a change in shareholding, namely the Adama group having bought 10% of the company's shares. "We continue our strategy and access specialized know-how for each line of business by developing strategic partnerships" mentioned the general manager of Agricovert Holding, Liviu Dobre in an interview given in October 2019 for *Ziarul Financiar*. This fits in very well with the arguments set out above, regarding the geometric growth and extension.

Competitiveness is stimulated by technology. Digitization and technological progress being strong competitive advantages. Increased efficiency, exceeding one's own limits and sustained progress, is targeted by all actors that outline agribusiness (both locally and nationally or internationally). Accessing know-how must occupy a leading place in the list of priorities of each manager.

Irrigation infrastructure, management systems for the livestock sector and the agricultural sector, integrated management systems, as well as various programs that facilitate the processing-marketing-sales of products, are gathered in this map aimed at digitizing agribusiness. Over time, with a gradual, modular implementation, every company in this economic branch should reach this stage of development, thus managing to move to another level of vision, respectively to higher added values.

Competitiveness analysis of Agrind SA and Holiv Ecoplant

The knowledge of the position that a company occupies in relation to its competitors must be known and capitalized on to consolidate and/or improve it. The competitiveness polygon represents the "graphic link of the evaluations of the situation of the enterprise in relation to their competitors according to the most important criteria of the activity, presented in the form of vector-axes" (Golban, 2013).

Agrind SA started as an agricultural company in 1991 and later expanded to a group focused on both the production and the processing component. Currently, the entity enjoys an important presence in the economic landscape of the county, or maybe even regionally and is expecting significant growth. The youngest company in the group, Holiv Ecoplant, was launched in 2016.

The vast portfolio and the extensive range occupied by the Agrind group is very difficult to find elsewhere, given the fact that several production activities (large crop, fruit growing, animal husbandry - milk and meat, electricity), respectively the part of processing (milling, bakery and confectionery, as well as a number of hazelnut products), moreover, storage and transport are two other (secondary) activities that can be found under the dome of the group. Agrind also invested in HORECA to diversify its activity, but also to sell its finished products.

In the category of direct competitors, are included the following two companies: Veres Agro Prod Com, respectively Agro Radu. To analyse these economic actors, certain data from their annual financial statements, indicators such as: the profit registered by these companies in 2019, the debts appearing in the financial statements for 2019, the average number of employees (from 2019), respectively the total level of income registered in the reference year, were considered.

Table 4. Analysis of the selected economic actors

	2019 (RON)			
	Profit	Total debts	Total income	Average number of employees
Agrind Group	2.928.631	11.949.980	36.177.868	79
Holiv Ecoplant	13.933	1.254.038	509.347	-
Veres Agro Prod Com	10.737.732	13.281.376	75.547.335	30
Agro Radu	152.561	24.572.882	32.058.218	13

Source: authors' projection based on the annual financial statements submitted to the Ministry of Public Finance

Table 5. Centralization of values (2019) for selected entities

Maximum level recorded		Percentage of maximum level recorded (%)			
		Agrind Group	Holiv Ecoplant	Veres Agro Prod Com	Agro Radu
Profit	10.737.732	27.27	0.13	100	1.42
Total debts	24.572.882	48.63	5.10	54.04	100
Total income	75.547.335	47.88	0.67	100	42.43
Average number of employees	79	100	0	37.97	16.45

Source: authors' projection

The companies on the market were analysed based on the competitiveness vectors specific to agribusiness in Romania: *the size of the farm*, its *capital* (technology, human resources, know-how, etc.), *the collective actions* in which the company is involved (cooperatives, associations), as well as *sustainability* (in terms of environmentally friendly policies and alternative energy sources).

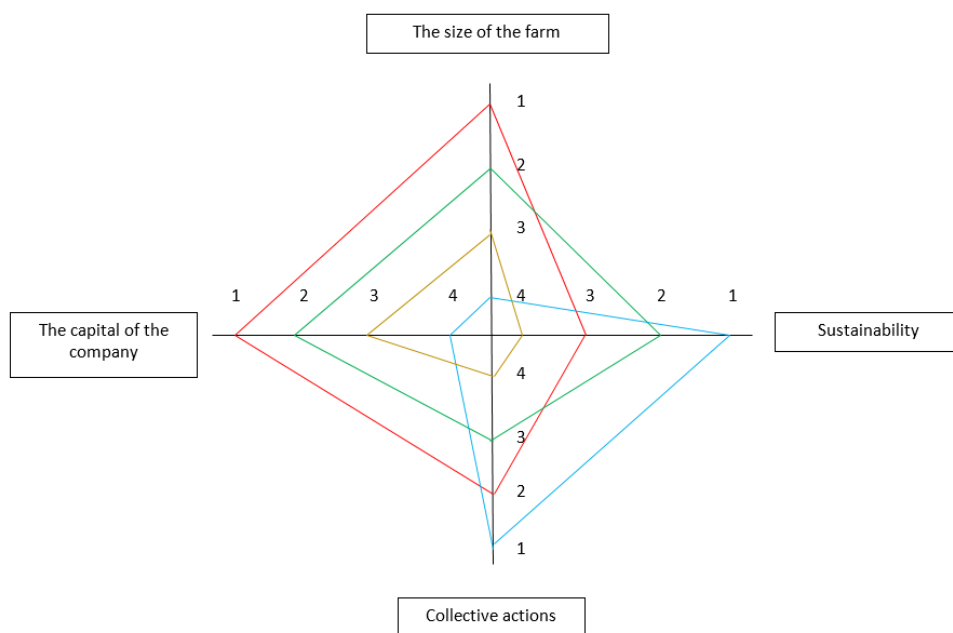


Figure 2. Competitiveness polygon

Source: authors' projection

Following the analysis of the competitiveness polygon, the research can offer a much clearer picture of the companies involved in the analysis, namely what their strengths are compared to their direct competitors, respectively which are the vulnerable areas (their weaknesses) in relation to competition.

Conclusions

Veres Agro Prod Com is the best-placed company in relation to the rest of the ones analysed above, in terms of total revenue, but especially due to the profit it achieved in 2019. The relatively small number of employees and the level of total debt maintained at a reasonable level, places this company in the most favourable position. Analysing the competitiveness polygon, it can be noticed the positioning on the second place from three points of view: the size of the exploitation, the capital of the company, as well as the level of sustainability. Overall, the company has a solid foundation, which will ensure its long-term development.

On the other hand, the diverse portfolio managed by the Agrind group ensure to the entity a privileged status, because there will always be a back-up, in case one market faces problems. The analysed group has benefited from a constant growth over time, stability, predictability, and prudence being the key words of top management. The study notices financial stability, respectively the leading position vis-à-vis the company's capital, as well as its size. In terms of sustainability, a timid progress can be observed, this area needing a boost. The same new breath is required in the specific chapter of collective actions. So, following some small changes, the present study can conclude that there are optimistic future scenarios.

In 2019, the commercial company Agro Radu, reached a relatively high level of debt, which will make probably the future of the company more difficult. The entity would need a different strategy because its characteristic polygon does not excel at any of the four dimensions (chosen criteria).

Regarding the entity Holiv Ecoplant, the start-up founded in 2016, an exponential evolution in the next 5-10 years can be predicted. Now, it does not show great results in its annual financial statement, considering that it is only at the beginning of the implementation of an ambitious, long-term resonant strategy. On the other hand, this start-up is superior in relation to the analysed entities, when it comes to sustainability (ecologically certified production and processing - 100%; emphasis on alternative energy sources: solar, electric machinery) and collective actions (clear steps taken towards the establishment of a cooperative and an association to achieve large-scale economies high yields).

REFERENCES

1. Armstrong, G., Kotler, P., Harker, M., Brennan, R. (2018), *Marketing an Introduction*, 4th edition, Pearson Education Limited
2. Chait, J. (2014), *Agribusiness. About money*, available at: <http://organic.about.com/od/organicdefinitions/g/Agribusiness-Definition-Of-Agribusiness.htm>, (accessed on January 4th, 2021)
3. Davis, J. H. (1955), *Business responsibility and the market for farm products*. Address to Boston Conference on Distribution, 17 October 1955, JDP, NAL
4. Davis, J. H. (1956), *From agriculture to agribusiness*, *Harvard Business Review*, 34, 107–115
5. Davis, J.H., Goldberg, R.A. (1957), *A Concept of Agribusiness*, Division of Research, Graduate School of Business Administration, Harvard University.
6. Dobrescu M., (2019), *Positive Prospects for Organic Food and Agriculture in Romania*, GAIN (Global Agricultural Information Network) Report, available at: <https://fas-europe.org/downloads/99/romania/1272/organic-market-romania-2019.pdf>, (accessed on January 17th, 2021)
7. Downey, W.D., Erickson, S.P. (1987), *Agribusiness Management*, McGraw-Hill, 1987
8. van Fleet, D. (2016), *What is Agribusiness? A Visual Description*, *Amity Journal of Agribusiness*, Amity University, Arizona State University, Tempe, United States, available at: <https://amity.edu/UserFiles/admaa/203Viewpoint.pdf>, (accessed on January 6th, 2021)
9. Golban, A. (2013), *Evaluarea metodelor de determinare a competitivității unităților agricole*, Universitatea Agrară de Stat din Moldova, available at: https://ibn.idsi.md/ro/vizualizare_articol/100943, (accessed on February 10th, 2021)
10. Goldberg, R. A. (1974), *Agribusiness management for developing countries – Latin America*, Ballinger Publishing Company.
11. Hassanzoy, N. (2019), *What is agribusiness*, Faculty of Agriculture, Kabul University, available at: https://www.researchgate.net/publication/332570862_What_is_agribusiness, (accessed on January 26th, 2021)
12. Molema, M., Segers, Y., Karel, E. (2016), *Introduction: Agribusiness Clusters in Europe, 19th and 20th Centuries*, *Tijdschrift voor Sociale en Economische Geschiedenis*, Amsterdam vol. 13, Iss. 4, (2016): 1-16, available at: <https://search.proquest.com/openview/36406d831a703aa909ad30fb21492f0a/1?pq-origsite=gscholar&cbl=2040268>, (accessed on January 15th, 2021)

13. van Rooyen, J., Boonzaaier, J. (2016), Competitiveness in the Agribusiness Environment, University of Cyprus, Centre for Agribusiness Stellenbosch University, available at: online
https://www.ucy.ac.cy/pr/documents/%CE%91rticles_speeches/2016/Speeches_/2016/JOHAN_VR_PAPER_22_Oct_16.pdf, (accessed on January 10th, 2021)
 14. Sachitra, V., Chong, S.-C. (2016), Firm Level Competitive Advantage in the Agricultural Sector: A Research Agenda, Department of Commerce, University of Sri Jayewardenepura, Sri Lanka; Finance Accreditation Agency, Malaysia, available at: https://www.researchgate.net/publication/301693018_Firm_Level_Competitive_Advantage_in_the_Agricultural_Sector_A_Research_Agenda, (accessed on February 7th, 2021)
 15. Sachitra, V. (2017), Review of Competitive Advantage Measurements: Reference on Agribusiness Sector, Management and Science University, Malaysia and Department of Commerce, University of Sri Jayewardenepura, Sri Lanka, available at: <https://www.journaljsrr.com/index.php/JSRR/article/view/22748>, (accessed on January 7th, 2021)
 16. Țimiraș, C. L. (2017), Evoluția Marketingului Agroalimentar din România în contextul extinderii Uniunii Europene, PhD Thesis, Academiei de Studii Economice București, available at:
 17. <http://cadredidactice.ub.ro/timirascatalina/files/2011/03/Tendinte-in-evolutia-mk.agroalim.in-Romania-Timiras-L.pdf>, (accessed on January 26th, 2021)
- *** Cambridge Dictionary, available at:
<https://dictionary.cambridge.org/dictionary/english/agribusiness>,
 (accessed on February 25th, 2021)
- *** Wikipedia, available at:
https://en.wikipedia.org/wiki/Business_cluster#Concept, (accessed on February 25th, 2021)
- *** Wikipedia, available at:
https://en.wikipedia.org/wiki/Agribusiness#Studies_and_reports,
 (accessed on February 25th, 2021)
- *** Agence BIO/Many European sources, Organic Farming and Market in the European Union (2019), available at: https://www.agencebio.org/wp-content/uploads/2020/04/Organic_farming_market_EU_2019.pdf,
 (accessed on February 25th, 2021)
- *** FAO (Food and Agriculture Organization of the United Nations) - Max Foster (2018), Hazelnuts: world production, by major producing country, available at: <https://pbs.twimg.com/media/D9tsFhQUYAEGxCn.png>,
 (accessed on February 26th, 2021)

- *** FAO (Food and Agriculture Organization of the United Nations) - Tilasto (2018), Romania: Hazelnuts, production quantity (tons), available at: <https://www.tilasto.com/en/topic/geography-and-agriculture/crop/hazelnuts/hazelnuts-production-quantity/romania>, (accessed on February 26th, 2021)
- *** Mordor Intelligence (2019), Global Hazelnut Market - Growth, Trends and Forecast (2020 - 2025), available at: <https://www.mordorintelligence.com/industry-reports/global-hazelnut-market>, (accessed on February 26th, 2021)
- *** Ordonanța nr. 26/2000, available at: http://mmuncii.ro/j33/images/Documente/Legislatie/Asistentia-sociala-2018/OG_26_2000_la_18-01-2018.pdf, (accessed on February 26th, 2021)
- *** Legea nr. 1/2005, available at: <https://lege5.ro/Gratuit/gy4tinrz/legea-nr-1-2005-privind-organizarea-si-functionarea-cooperatiei>, (accessed on February 26th, 2021)
- *** Ordonanța nr. 37/2005, available at: <https://lege5.ro/Gratuit/g4ytmojw/ordonanta-nr-37-2005-privind-recunoasterea-si-functionarea-grupurilor-si-organizatiilor-de-producatori-pentru-comercializarea-produselor-agricole-si-silvice>, (accessed on February 27th, 2021)
- *** Situații financiare anuale, Ministerul Finanțelor Publice, available at: <https://www.mfinante.gov.ro/infocodfiscal.html>, (accessed on February 27th, 2021)
- *** Statista - Global Marketing Associates (2020), Global organic market: export opportunity analysis, available at: <http://www.globalmarketing1.com/food-beverage/global-organic-market-export-opportunity-analysis/>, (accessed on February 27th, 2021)
- *** *Ziarul Financiar* (octombrie, 2019), Conferința ZF Agribusiness 2019, available at: <https://www.zf.ro/companii/conferinta-zf-agribusiness-2019-agricultura-devina-motorul-principal-economiei-agricultura-devina-motorul-principal-economiei-fermierii-asocieze-transforme-materia-prima-produs-finit-18515464>, (accessed on February 27th, 2021)
- *** *Ziarul Financiar* (octombrie, 2019), Grupul Adama cumpără 10% din compania Agricover, distribuitor de inputuri agricole, controlat de Jabbar Kanani, disponibil online <https://www.zf.ro/companii/retail-agrobusiness/grupul-adama-cumpara-10-din-compania-agricover-distribuitor-de-inputuri-agricole-controlat-de-jabbar-kanani-18496152>, (accessed on February 27th, 2021)

- *** Wall-Street (septembrie, 2019), Agricultura la raport: top 10 cele mai mari companii din sectorul agricol, available at: <https://www.wall-street.ro/articol/Agricultura/244507/agricultura-la-raport-top-10-cele-mai-mari-companii-din-sectorul-agricol.html#gref>, (accessed on February 25th, 2021)
- *** *Tharawat Magazine* (iulie, 2019), Top Ten Agribusiness Companies in the World, available at: <https://www.tharawat-magazine.com/facts/top-ten-agribusiness-companies/>, (accessed on March 3rd, 2021)
- *** CB Insights (May, 2017), The Ag Tech Market Map: 100+ Startups Powering The Future Of Farming And Agribusiness, available at: <https://www.cbinsights.com/research/agriculture-tech-market-map-company-list/>, (accessed on March 3rd, 2021)

CRYPTOCURRENCIES' PUZZLE

CORNELIA POP¹, INGRID-EMANUELA COLONESCU²

ABSTRACT. The present paper tries to bring a certain degree of clarity to the cryptocurrencies puzzle by discussing the existing definitions and some classifications identified by academic studies. Further, it investigate, based on various academic studies, the uses of cryptocurrencies and their potential role as alternative money. The regulations regarding the cryptocurrencies are also considered since the spreading of the cryptocurrency phenomenon and the risks associated with the use of cryptocurrencies in various capacities raise problems related to (small) investor protection and anti-money laundering.

Key words: cryptocurrencies, medium of exchange, assets, regulations

JEL Classification: E49; E59

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Introduction and a brief literature review

The introduction of bitcoin on October 31st 2008 through the white paper released by the pseudonymous programmer/group of programmers, Sastoshi Nakamoto (Ammous 2018, Dimitrova et al. 2019) was a first small step toward what became, a decade latter, the global phenomenon of cryptocurrencies.

¹ Prof dr, Faculty of Business, Babes-Bolyai University, Cluj-Napoca, Romania, e-mail: cornelia.pop@tbs.ubbcluj.ro

² Master graduate, Faculty of Business, Financial Analyst at Endava, Romania, e-mail: ingridcolonescu@yahoo.com

Bitcoin started operating in January 2009 (Hileman & Rauchs 2017, Ammous 2018), was first listed on an exchange/trading platform starting with October 2009 and May 2010 recorded the first transaction where bitcoin served as medium of exchange (Ammous 2018). The second cryptocurrency, Namecoin, emerged in April 2011 (Hileman & Rauchs 2017). Since then, the amount of what are generically called cryptocurrencies grew dramatically (Table 1) in number and market capitalization, though bitcoin maintaining its dominance and popularity generated by its first mover position. Nonetheless, one should mention that, as of December 2020, 1,683 of the 4,048 (41.58%) cryptocurrencies registered by CoinMarketCap provided no information regarding the amount of units/tokens in circulation and therefore no market capitalization was calculated for them (<https://coinmarketcap.com/historical/>).

Table 1. Evolution of cryptocurrencies' number and capitalization

Data	No. of cryptocurrencies	Capitalization (UDS million)	Bitcoin capitalization as percentage of total	Bicoin price in USD
April 28 th 2013	7	1,580.54	94.18%	134.21
Dec 29 th 2013	67	10,364.14	87.63%	745.05
Dec 28 th 2014	517	5,555.95	78.00%	317.24
Dec 27 th 2015	557	6,946.92	91.38%	422.82
Dec 25 th 2016	663	16,385.56	87.86%	896.18
Dec 31 st 2017	1,353	614,240.51	38.66%	14,156.44
Dec 30 th 2018	2,073	130,538.79	51.69%	3,865.95
Dec 29 th 2019	2,388	201,565.95	66.76%	7,422.65
Dec 27 th 2020	4,048	728,469.25	67.02%	26,272.29

Source: authors' compilation based on data available at <https://coinmarketcap.com/historical/>

Not only the number of cryptocurrencies and their associated market capitalization registered growth, but also the alternative products using the cryptocurrencies as underlying assets entered the market have grown. Foley et al. (2019) mention more than 170 crypto(hedge)funds and the fact that since December 2017 bitcoin futures contracts were introduced at Chicago Board Options Exchange (CBOE) and at Chicago Mercantile Exchange (CME). These developments show the growing interest of the investors and intermediaries on what was once a marginal asset (Foley et al. 2019).

The white paper of Nakamoto laid out the ground for a token/virtual currency which exists within a specific system and is based at least on the following features (BIS 2018, De Filippi 2014, Cobert et al. 2019, Hileman & Rauchs 2017):

a) there is an open-source software/protocol which allow the private issuance of the respective token/virtual currency;

b) the existence of a fully decentralized and less costly peer-to-peer (P2P) network which allows the transfer of the respective token/virtual currency without the presence and/or intervention of a central counterpart or an intermediary;

c) the existence of a digital ledger sharing the history of the transactions and available to all the network participants.

The most attractive idea behind the launch of bitcoin (and the cryptocurrencies that followed since) was represented by the absence of a central authority (central bank, government or other classic financial institution) involvement in the issuance of the respective cryptocurrency, in its transfer among the network participants, and in the adjustment of the available number of units or circulating quantity (BIS 2018, Vaz & Brown 2020, Hileman & Rauchs 2017).

Cryptocurrencies seemed to promise to attain and maintain the trust (of their users) and the stability of their value based on cryptographic algorithms and consensus-based blockchain platforms, by avoiding the presence of the traditional financial institutions and the governments' interventions, supervision and support and their potentially misguided incentives (BIS 2018, Vaz & Brown 2020, Cobert et al. 2019, Sobiecki 2015).

The introduction of bitcoin at the end of 2008/the beginning of 2009, with the alluring promises presented above, came at an opportune time: the global financial crisis reached its climax in September 2008 creating what was considered the most serious economic downturn since the Great Depression of 1929-1933 (Merediz-Sola & Bariviera 2019, Almunia et al. 2009). Therefore, the general public trust in the classic financial sector institutions and governments was at a very low level and this erosion of trust triggered a quest for alternative solutions, one being proposed by bitcoin (BIS 2018, Vaz & Brown 2020).

While the erosion of trust in the classic financial system might be consider one main trigger of the interest arose by the introduction of bitcoin, the wide spread of personal computers, the increased performance

of mobile phones and the cheaper and faster access to Internet played their role in the rapid spreading of bitcoin (and later on of the other cryptocurrencies) among a large number of individual users³. Furthermore, while no academic study investigated the problem yet (to the best of authors' knowledge) the spread of information technology was also combined with the generation Y (the millennials) reaching the maturity and having a lot of influence with their propensity toward any novelty introduced via information technology.

Since 2011, when most of the early studies related to cryptocurrencies were identified by Guo & Donev (2020) and Holub & Johnson (2018), the literature on this topic grew similar to the expansion in the number of cryptocurrencies. Table 2 below shows the main topics discussed by academic works in relation to cryptocurrencies.

Table 2. Main topics in academic works related to cryptocurrencies

Liu (2016)	Holub & Johnson (2018)	Merediz-Sola & Bariviera (2019)	Guo & Donev (2020)
Based on 253 studies from Scopus database	Based on 917 studies selected from 20 databases	Based on 1,162 studies from Web of Science	Based on 833 studies from Web of Science and Scopus
Main topics: <i>Technology</i> <i>Economics & finance</i> <i>Legal and regulatory</i>	Main topics: <i>Technology</i> <i>Economics</i> <i>Finance</i> <i>Accounting</i> <i>Tax</i> <i>Regulation</i>	Main topics: <i>Computer Science</i> <i>Business Economics</i> <i>Engineering</i> <i>Telecommunications</i> <i>Science Technology</i>	Main topics: <i>does not structure the investigated studies by main topics</i>

Source: based on Liu (2016), Holub & Johnson (2018), Merediz-Sola & Bariviera (2019), Guo & Donev (2020)

Furthermore, while the early focus of academic studies was mainly on blockchain technology, the focus gradually shifted toward the features of cryptocurrencies that can allow them to (eventually) become a substitute

³ One should not forget that privately issued virtual currencies predate cryptocurrencies by at least a decade - e.g. the use of private tokens in massive multiplayer online games (BIS 2018, De Filippi 2014). Others (Fletcher et al. 2020) also consider various types of loyalty points and/or air miles as virtual currencies which exists within a centralized structure of particular entity.

of fiat money. More recently the interest shifts again toward the features of cryptocurrencies that make them attractive alternative investments and/or safe-have assets due to their low correlation with the traditional financial markets (Merediz-Sola & Bariviera 2019, Guo & Donev (2020), Lee & Teo 2020).

The present paper tries to bring a certain degree of clarity to the cryptocurrencies puzzle by discussing the existing definitions and some classifications identified by academic studies. Further it investigate, based on various academic studies, the uses of cryptocurrencies and their potential role as alternative money. The regulations regarding the cryptocurrencies are also considered since the spreading of the cryptocurrency phenomenon and the risks associated with the use of cryptocurrencies in various capacities raise problems related to (small) investor protection and anti-money laundering.

A brief discussion regarding the definition of cryptocurrencies and their typology

Since bitcoin was launched in 2008/2009 and with the subsequent development of similar cryptocurrencies, various regulatory authorities and academic studies have tried to find a suitable definition for cryptocurrencies. However, until the end of 2020, there is no general consensus neither regarding the nature of cryptocurrencies nor regarding, in fact, the name. The nature of cryptocurrencies is difficult to establish since they can represent different things depending on their owners' and/or users' interests. In this capacity, a cryptocurrency can be, as suggested by Sobiecki (2015) and Feinstein & Werbach (2021), an investment asset or a speculative asset, respectively a new class of financial assets, a commodity, a medium of exchange or a payment mechanism, a novel fund-raising tool for businesses, just to name a few. On the other hand, the name 'cryptocurrencies' has arisen long before the formulation of a definition and became a generally accepted expression, though the name is attached to representations that have not been recognized as money, nor have been accepted as legal tender and, therefore, inappropriately called currencies.

Nonetheless, since the expression 'cryptocurrency/cryptocurrencies' entered more than a decade the vocabulary of specialists, academia and common people, it will be generically used within this paper also.

Most of the definitions regarding cryptocurrencies consider them digital or virtual currencies that rely on cryptographic algorithms for the security of its creation, counterfeiting, and against fraudulent transactions among interested parties (De Filippi 2014, BIS 2018, Boshkov 2019, Lahajnar & Rozanec 2020; Dumchikov et al. 2020).

More recently, some of the European regulatory authorities – ECB (European Central Bank), EBA (European Banking Authority), ESMA (European Securities and Markets Authority), and FATF (Financial Action Task Force) – have aligned their vision on cryptocurrencies based on the definition proposed by the EU Directive 2018/843 (Houben & Snyers 2018). The definition considers cryptocurrencies as being virtual currencies which describe a digital representation of value that has the following characteristics: a) the respective representation of value is neither issued nor guaranteed by a central bank or a public authority; b) it is not necessarily (but might be) attached to a legally established currency; c) it does not possess the legal status of currency or money; d) however, it is accepted by natural or legal persons as a medium of exchange/payment; and e) it can be transferred (mostly peer-to-peer), stored and traded electronically.

Similar to the European definition, the IMF (International Monetary Fund) and the World Bank consider cryptocurrencies as a subset of virtual/digital currencies which stand for a digital representation of value, denominated in their own unit of account (Houben & Snyers 2018).

While the most important features of cryptocurrencies are captured by the EU Directive definition, several other features should be added in order to understand why, up to this moment, the cryptocurrencies have not managed to become important competitors to the fiat currencies as they seemed to promise about a decade ago. Among the other features that should be considered by anyone interested in cryptocurrencies the following must be included:

a) the fixed maximum quantity for the most launched cryptocurrencies, which is established and controlled by the respective protocols (De Filippi 2014).

b) the transfer of the respective cryptocurrencies is done peer-to-peer, based on the cryptographic techniques to achieve consensus⁴ and the transfer of cryptocurrencies does not need the presence of a third (trusted) part intermediary (Houben & Snyers 2018).

c) though created privately, most cryptocurrencies are no one's liability, therefore they cannot be redeemed in case of accidental loss of access keys and/or cyber-attacks (BIS 2018, Vaz & Brown 2020, Lastra & Allen 2018).

d) the transactions with cryptocurrencies cannot be reversed in case of simple mistakes or, again, cyber-attacks (Vaz & Brown 2020, De Filippi 2014).

One must note that, given the above-mentioned features, most cryptocurrencies have no intrinsic value. Therefore a number of studies suggested that the value given to them derives from the way users perceive them (as asset, commodity, medium of exchange), from the expectation that the respective cryptocurrencies will continue to be accepted by other users, and from the confidence and trust users have in the algorithms that operate the respective networks and allow the identification of all transactions via ledgers (Cobert et al. 2019, Fletcher et al. 2020, BIS 2018, Athey et al. 2016). Feinstein & Werbach (2021) added the dimension of user sentiments and/or attitudes to the quest of the perceived value of cryptocurrencies, highlighting that these sentiments/attitudes can play a greater role in the case of cryptocurrency pricing compared to traditional financial assets.

Given the large number of cryptocurrencies in existence, any attempt to classify them will remain incomplete. However, at least two classifications can be taken into account.

One can be considered an early classification and is related to the introduction of bitcoin and its dominance on the market. This classification proposes the following arrangement:

a) bitcoin, standing alone, in a class of its own, given the status of being the first launched cryptocurrency;

b) altcoins, being any other cryptocurrency alternative to/other than bitcoin (Hileman & Rauchs 2017; Houben & Snyers 2018). Further, Houben & Snyers (2018) proposes the following sub-classes for altcoins:

⁴ For more details see footnote 65 in Houben & Snyers 2018).

b1) altcoins that are similar with bitcoin, having however some different features; Hileman & Rauchs (2017) showed that, at the time of their work, most of the existing cryptocurrencies were similar to bitcoin;

b2) altcoins that use their own, different, blockchain protocol on which their distributed ledger is based.

The second classification is mostly used by various reports and academic studies due to the fact that it offers a better structure for studying cryptocurrencies mainly considering their potential capacity as medium of exchange, unit of account, and store of value (Houben & Snyers 2018, Auer & Claessens 2020, Fletcher et al. 2020). This classification proposes the following sub-classes based on the type of blockchains used by the respective cryptocurrencies' networks. Therefore, the following grouping can be found:

a) *cryptocurrencies based on open/public or permissionless blockchains*; these cryptocurrencies are accessible via an open-source software and promise a fully decentralized setting (Fletcher et al. 2020, BIS 2018, Auer & Claessens 2020); there is no central entity that can be considered the owner and/or the administrator of the respective cryptocurrency network and software (Houben & Snyers 2018); any person can join or leave the network of the chosen cryptocurrency anytime and there is no need of a pre-approval issued by any central entity (Houben & Snyers 2018); the transactions are recorded by a ledger and identical copies of the ledger are available to the network participants, though the ledger can be changed only by a consensus among the participants (Houben & Snyers 2018, BIS 2018); the transactions are peer-to-peer and are validated and executed without the intermediation of a trusted third party (Houben & Snyers 2018).

This category of cryptocurrencies is the dominant one and most of the time the cryptocurrencies are intended **to be used as means of payment or of exchange**; they are also used for **investment** purposes (EBA 2019, Lastra & Allen 2018).

Over the past few years the subcategory of *stablecoins* was introduced as means of payment/exchange. The *stablecoins* are either backed by a fiat currency or by another type of physical asset or even a crypto-asset, or can be based on an algorithm that can try to ensure the stability of the value of the respective stablecoin (EBA 2019, Klein et al. 2020). Nonetheless, according to Klein et al. (2020), most stablecoins are

used rather as vehicle currencies for the exchange of various crypto-assets and the situation seems to be due to the regulatory uncertainty related to cryptocurrencies in general.

b) *cryptocurrencies based on permissioned blockchains*; the networks of these cryptocurrencies give selected participants various types of access rights and the networks' administrators set the rules for pre-selecting the transactions' validators (considered trusted participants) and the rules for their respective ledgers (Auer & Claessens 2020 Houben & Snyers 2018, BIS 2018); in these cases, the participants to the network have to trust the central entity which coordinates/administrates the network mainly for selecting the reliable trusted participants or nodes (Houben & Snyers 2018, BIS 2018).

Houben & Snyers (2018) proposes the further division of *the cryptocurrencies based on permissioned blockchains* in two subcategories:

b1) *cryptocurrencies based on open or public permissioned blockchains*; these networks can be accessed and viewed by any interested person; however, the transactions can be generated and/or the ledger can be updated only by the authorized network participants; similar with the cryptocurrencies based on permissionless blockchains, the transactions within these networks can be validated and executed without involving a third (trusted) party; these cryptocurrencies, depending on the rules set by the respective networks' administrators, can be **convertible** in fiat currencies and/or can function as **investment tokens**, as discussed by EBA (2019) and Lastra & Allen (2018); they also can be **means of payment or of exchange** (EBA 2019, Lastra & Allen 2018);

b2) *cryptocurrencies based on closed or 'enterprise' blockchains*; in the case of these networks, the access is restricted to those participants accepted by the administrators; furthermore, only the network administrator can generate transactions and update the state of the ledger; these cryptocurrencies are often associated with **utility tokens** (EBA 2019, Lastra & Allen 2018) and most of the time are considered to be **non-convertible** in fiat currencies (FATF 2014); they are confined to the centralized structure of a particular entity and the respective entity can be identified as a legal one (Auer & Claessens 2020, Fletcher et al. 2020).

One cannot close this brief classification without stressing that the boundaries between various categories of cryptocurrencies remain blurry since the cryptocurrencies' versatility depending on their users' perceptions

can move them easily from one category to another, as stressed by EBA (2019) and Lastra & Allen (2018) and showed by the alternative classification (based on their various uses) proposed by Lee & Teo (2020).

The use of cryptocurrencies and their potential role as alternative money

The relatively rapid acceptance and the growth in the use of cryptocurrencies can be connected mainly to their promises of low-cost technologies, low transaction costs, the peer-to-peer system, the absence of a central/governmental authority and (pseudo)anonymity for the users (Cobert et al. 2019, Van Alstyne 2014, BIS 2018). Based on these features, the advocates of cryptocurrencies enhanced the idea that the cryptocurrencies will be easily available to those who have a difficult access to traditional finance alternatives due to their size (e.g. small merchants as stressed by Scott (2016)) or to those banned from the classic financial alternatives due to bankruptcy or for other reasons (Granot 2019).

Nonetheless, one must note that, strictly speaking, no cryptocurrency transaction is completely anonymous since any protocol has the possibility to trace the transactions to and from the (pseudo)anonymous addresses used and which, in the end, can be linked to an identity (De Filippi 2014, Brito & Castillo 2013). However, as FATF (2014) shows, one can use various anonymising tools for further concealment of their identity, like ‘tumbling’ and ‘mixing’ (Morton 2020). Based on these anonymising tools a subset of cryptocurrencies with enhanced privacy features emerged (called privacy coins/cryptocurrencies); the most well-known within this new subset are Dash, Zcash, Zcoin and Monero (Lee & Teo 2020).

There is no doubt that it is difficult or very difficult to discover the real identity of cryptocurrency users (De Filippi 2014, BIS 2018) and therefore warnings regarding the use of cryptocurrencies for money laundering, other fraudulent transactions to avoid capital control and/or taxation were discussed by the early studies of Stokes (2012) and Gruber (2013). Also, the recent study of Fletcher et al. (2020) points toward the features of cryptocurrencies (their (pseudo)anonymity, their peer-to-peer transactions with their irreversible and transnational nature) as enablers for the use

of cryptocurrencies in various criminal activities, including terrorist financing and money laundering. This situation is further enhanced by the studies of Foley et al. (2019), Vaz & Brown (2020), and Feinstein & Werbach (2021).

The study of Tasca et al. (2018), for the period 2009-2015, identified 3 sub-periods in the use of bitcoin/cryptocurrencies, as follow:

a) the first sub-period between 2009 and 2011, dominated by mining and by small test transactions;

b) the second sub-period between 2011 and 2013, that of 'sin users', when bitcoin was rapidly adopted by 'sin enterprises' (those involved in gambling, drug use, pornography, and other illicit activities); this rapid adoption was incited by the bitcoin features – (pseudo)anonymity and the absence of a governmental control; nonetheless, during this sub-period also exchange activities were taking place;

c) the third sub-period since 2013 onward, considered to be exchange dominated due to the proliferation of exchange activities and the increased presence of legitimate merchants as users of bitcoin; this growing presence of legitimate merchants is also mentioned by De Filippi (2014).

A series of studies confirm the above-mentioned sub-periods, adding more information.

De Filippi (2014), Vaz & Brown (2020), and Lee & Teo (2020) highlighted that the mining process for cryptocurrencies (namely bitcoin) is not a very simple one for any average computer uses and also proved to be costly from energy consumption viewpoint. This high energy consumption, mainly for bitcoin mining, is also presented by Stoll et al. (2019), a situation which led to a concentration of the mining market within a small number of mining companies (like Bitmain, Ebang, Canaan) which accumulate about 65% of this market, while small scale miners barely reach 8% (Lee & Teo 2020).

As consequence, a series of intermediaries emerged, providing a simpler and easier way for common people to acquire, trade and exchange cryptocurrencies versus fiat money at low or very low transaction fees (De Filippi 2014, Vaz & Brown 2020). The market system for cryptocurrencies grew in complexity including the cryptocurrency creators/inventors, cryptocurrency offerors, the miners (in the case of proof-of-work protocols) and forgers (in the case of proof-of-stake protocols), cryptocurrency exchanges and trading platforms, (crypto)wallet providers

and, of course, the users (Houben & Snyers 2018, FATF 2014). The cryptocurrencies exchange market is highly fragmented, with about 250 crypto exchanges functioning around the world, according to Lee & Teo (2020), while Feinstein & Werbach (2021) mentions 325 crypto exchanges as of June 2020.

A Europol report of 2015 considers that cryptocurrencies were used in more than 40% of the illicit transactions in the European Union (Morton 2020). Fanusie & Robinson (2018) report on bitcoin laundering, between 2013 and 2016, after investigating 102 illicit entities, shows that most of the unlawful activities originated mainly on dark-net marketplaces with Silk Road (shut down in 2013), Alpha Bay (shut down in 2017) and Agora leading the way with their involvement in selling illegal drugs and a multitude of other illicit items and services (Fanusie & Robinson 2018). The findings of Fanusie & Robinson (2018) are confirmed by the strong market price reaction of bitcoin to the shut down of Silk Road, suggesting a substantial connection – at least of bitcoin – with illicit activities (BIS 2018). The report of Fanusie & Robinson (2018) is further supported by the study of Foley et al. (2019) which shows that about 25% of bitcoin users are involved in illegal activities and about 46% of bitcoin transactions are illegal activities. The findings of these studies are reinforced by Feinstein & Werbach (2021). All these results extend the second sub-period of Tasca et al. (2018) beyond 2013, at least until the beginning of 2017/2018.

On the other hand, other relatively early study of Glaser et al. (2014) showed that the common (mostly uninformed) users who approached cryptocurrencies were interested mainly in the potential cryptocurrencies' role as alternative investment vehicle and were less predisposed to regard them as an alternative mean of payment. This idea was later confirmed by Fabris (2019) who also showed that cryptocurrencies – mainly bitcoin – are mostly traded for investing or speculative purposes, suggesting that – in some cases – cryptocurrencies are referred as 'tulips', making a parallel with the tulip-mania of the 17th century and stressing the highly speculative profile of cryptocurrencies.

Further, the study of Foley et al. (2019) indicates that the illegal share of bitcoin transactions is decreasing as the mainstream interest for bitcoin increases, mentioning that the emergence of other, more opaque, cryptocurrencies (the above-mentioned privacy cryptocurrencies/coins)

attract the interest of the 'sin users'. The study of Foley et al. (2019) is further confirmed by Lee & Teo (2020) and Feinstein & Werbach (2021) which also consider that cryptocurrencies are rather used as (speculative) investment vehicles. All these studies confirm the third sub-period proposed by Tasca et al. (2018) and highlight the relative marginal role of cryptocurrencies as the initial intended medium of exchange/payment mechanism.

Foley et al. (2019) distinguished two main categories of bitcoin users, categories that can be extended to the other cryptocurrencies:

a) the illegal users who tend to use bitcoin/cryptocurrencies as a medium of exchange, to transfer this medium of exchange repeatedly to a given counterpart and the transfers are of (relative) small size; these users also often employ transaction techniques that obscure their activities; they also tend to hold less bitcoin or other cryptocurrencies;

b) the legal users of bitcoin/cryptocurrencies that treat them mainly as investments or speculative assets.

The study of Bouri et al. (2020) shows that the use cryptocurrencies is also influenced by geopolitical risks. In the region where political instability is high, the investors might move toward cryptocurrencies (mainly bitcoin) as shelter, while the mistrust in the respective local traditional currencies induce the use of cryptocurrencies as medium of exchange. However, even when these extreme situations are taken into consideration, the use of cryptocurrencies as medium of exchange remains low.

The evidence of the studies mentioned above suggests that the main use of cryptocurrencies (mostly bitcoin and other top 20 cryptocurrencies) is as alternative investments or speculative assets, in general since 2013-2015. It is only natural for one to ask why the cryptocurrencies did not really succeeded in their intended purpose to become (at least) a widespread medium of exchange?

In order to answer the question above, a brief review of the three roles that classic/fiat money perform is necessary. These three fundamental roles are: a) medium of exchange; b) unit of account; and c) store of value (BIS 2018, Vaz & Brown 2020). To fulfill this triad the fiat money need to maintain a relatively stable value (purchasing power) over time, to prove that a transaction can be completed and can intermediate the transfer of

value (BIS 2018, Vaz & Brown 2020, Ammous 2018). To avoid the purchasing power volatility, the supply of fiat money must be elastic in order to address the fluctuating demand (BIS 2018, Vaz & Brown 2020, Ammous 2018). In order to ensure this and generate trust in fiat money, the current institutional arrangements were created (BIS 2018, Vaz & Brown 2020). The central banks are the core of these arrangements and through their monetary policies they prevent their respective currency's purchasing power volatility (Ammous 2018). Furthermore, the central banks create and manage the public trust by controlling excessive risk-taking behaviors and by reducing the concerns related to the risk of using the fiat money in any of the three roles (Vaz & Brown 2020,). These are the overall features of what is generally called 'good money' (BIS 2018, Ammous 2018).

When cryptocurrencies were launched with the intention to represent an alternative form of money, their advocates claimed there will be a new model of decentralized trust (Auer & Claessens 2020). Furthermore, this trust seemed to derive from the cryptocurrencies 'one stop shop' features since, as shown by Vaz & Brown (2020), the cryptocurrencies are a combination between digital currencies, a payment system and a settlement mechanisms. These features are completed by the capacity of cryptocurrencies to provide automatically initiated conditional transactions associated with bank-like account functions (Vaz & Brown 2020).

Based on the declared model of decentralized trust and on their multifaceted features, it is only natural to ask which of the fundamental roles of fiat money the cryptocurrencies were able to fulfill in their existence of about a decade.

The role of medium of exchange is best suited for those cryptocurrencies that are based on permissionless blockchains and, probably up to a point, to those cryptocurrencies based on open permissioned blockchains, providing that they are not tokens intended to be used for a specific purpose (Ammous 2018).

In their role as medium of exchange, the cryptocurrencies are supposed to intermediate transactions peer-to-peer, via their respective networks/protocols.

However, recent studies have pointed out that mainly the proof-of-work consensus mechanism, though most secure and sophisticated (Klein et al. 2020, BIS 2018), prove also to be energy intensive (Chiu &

Koepl 2019, Cobert et al. 2019, Klein et al. 2020, Fabris 2019, Bouveret & Haksar 2018) since it requires expensive redundant processing due to the need to operate a consensus based distributed ledger (Vaz & Brown 2020, BIS 2018, Auer 2019). It seems that there is a low transaction turnover; Klein et al. (2020) mentions about 7 bitcoin transactions per second, while Vaz & Brown (2020) mention that the processing time of a (bitcoin) transaction might vary between few seconds and an hour, an affirmation confirmed by BIS (2018) which shows that cryptocurrency transactions have a tendency to become congested (payments becoming more slow and difficult) when the number of those who use them for payment increases.

Furthermore, academic studies have also shown that (mainly for the most used 10 to 20 cryptocurrencies) their scalability to the transaction demand is another important problem, cryptocurrencies proving to be from difficult to use to almost useless in day-to-day, small transactions (Auer 2019, Vaz & Brown 2020, BIS 2018, Klein et al. 2020). Vaz & Brown (2020) further suggest that small transactions within the respective cryptocurrencies networks might be marginalized and discriminated based on costs in favor of large transactions. This situation proves that the promise of low-cost transactions via cryptocurrencies was not realized (Auer 2019, Vaz & Brown 2020). Also unrealized remained the pledge of an increased accessibility for low-income and other groups ignored by the traditional financial system due to various reasons (Vaz & Brown 2020). This low accessibility of cryptocurrencies networks by the mentioned groups comes not only from high access costs (energy related to protocol complexity) but also from the lack of knowledge regarding cryptographic algorithms and their ability and/or available time to deal with an important amount of information contained by the distributed ledgers (Auer 2019, Vaz & Brown 2020).

To this important problem another one was revealed and added: the fact that the finality of payments via permissionless protocols cannot be guaranteed nor the transactions could be reversed if an error (regarding the destination) occurs (De Filippi 2014, BIS 2018, Vaz & Brown 2020, Fletcher et al. 2020).

In an attempt to solve some of the problems mentioned above, various solutions appeared. New protocols, like proof-of-stake, tried to address the scalability of cryptocurrencies, though some of the security

features of the proof-of-work mechanism were lost (Klein et al. 2020). Another solution was the forking: the replication of a blockchain under a new name of a new version of an existing cryptocurrency (Vaz & Brown 2020). Both solutions and the problems mentioned above had a negative impact on the cryptocurrency users, mainly on their trust in cryptocurrencies as an alternative form of money (Vaz & Brown 2020). This situation is further enhanced by the study of Foley et al. (2019) showing the dominance of illegal users of cryptocurrencies as mean of payment.

Another important problem with most cryptocurrencies, which were inspired by the success of bitcoin and therefore are based on permissionless blockchains (Hileman & Rauchs 2017, Ammous 2018), is represented by their predetermined supply which implies strict limits on the quantity that can be issued and controlled by protocols (BIS 2018, Ammous 2018, Vaz & Brown 2020). Therefore the cryptocurrencies supply is rigid/inflexible and, without the intervention of a third party, cannot be adjusted to a widely fluctuating demand, and - in the end - to the economy's needs (BIS 2018, Ammous 2018, Vaz & Brown 2020). Hence, this unsteady demand has already created bubble type situations (Vaz & Brown 2020) with the natural consequence of high volatility of cryptocurrencies' value (BIS 2018, Ammous 2018, Lee & Teo 2020). Obviously, this situation had at least the following negative consequences:

a) on cryptocurrencies scalability – limiting their capacity to adapt to small scale transactions and, as a result, impairing their potential role as a common and liquid medium of exchange (Ammous 2018, Vaz & Brown 2020);

b) on cryptocurrencies capacity to be used as unit of account since their value is highly unstable (BIS 2018, Ammous 2018, Vaz & Brown 2020, Fabris 2019);

c) on cryptocurrencies capacity to be used as store of value, for the similar reason of high volatile value (Fabris 2019).

An additional problem related to cryptocurrencies was highlighted by BIS (2018): any cryptocurrency can simply stop functioning for various reasons and since the respective cryptocurrency is no one's liability, the result for any user will be a complete loss of value.

All the problems mentioned above show that any interested user (if he/she is not a blind enthusiast of cryptocurrencies) has to ask some

questions when the trust in cryptocurrencies as an alternative form of money comes into discussion. For sure some important doubts exist and these are proven by documented facts. Until the end of 2020 cryptocurrencies could not establish themselves as alternative money since their role of medium of exchange is still limited and they do not represent a real replacement of the existing large retail payment networks (Chiu & Koepl 2019) and do not – at least for now – can provide a solid base for a cashless world (Fabris 2019, Auer & Claessens 2020, Vaz & Brown 2020). Furthermore, cryptocurrencies can not fulfill the other two roles of money: unit of account and store of value due to their highly volatile value. Also, as Vaz & Brown (2020) showed, due to their (pseudo)anonymity, cryptocurrencies are difficult to use in lending/credit relations. Though some platform like CoinMarketCap start offering on their websites services for lending cryptocurrencies, it is not clear yet how extensive and frequent these services are used. Furthermore, the lending of cryptocurrencies raises questions related to interest rate levels and also how and who will deal with the creation of new quantities of the respective (lent) cryptocurrencies via interest rate in a medium where the available volume of cryptocurrencies is limited. As Ammous (2018) highlights, the cryptocurrencies role as medium of exchange should be supported by their utility in the other main roles as alternative money.

Therefore, the suggestion of Vaz & Brown (2020) and of BIS (2018) that cryptocurrencies (as an alternative form of money) need a form of financial architecture – like the existence of a counterpart willing to stabilize their value, either under legal obligation or through incentives – in order to enable the built of trust and further the support of this trust is based on the main characteristics of 'good money'.

As mentioned above, most users of cryptocurrencies prefer them as alternative investments or speculative assets, therefore relying heavily on the intermediaries that emerged to provide intermediation services for the cryptocurrency markets (cryptocurrencies' exchanges, (crypto)wallets' providers, (crypto)trading platforms). Most of these intermediaries were and still are unregulated and also most of them are located offshore (BIS 2018, Vaz & Brown 2020). These 'features' only increase the risk of total value loss for average, usually small, cryptocurrency users (Vaz & Brown

2020). A number of these intermediaries fell victim of hacking attacks⁵, in the lead being the Japanese MtGox exchange in 2014 which lost an estimated value of \$400 million in bitcoin and the Japanese Coincheck exchange in 2018 which lost an estimated value of \$500 million in digital token (BIS 2018, Cobert et al. 2019).

Furthermore, as stressed by Vaz & Brown (2020), due to the cryptocurrencies design, if the password or the digital key for a (crypto)wallet is stolen/hacked or lost, there is no possibility for the user to recuperate the lost value unless there is a backup offered by the holder/provider of the respective service or the situation is mitigated via a third party (Vaz & Brown 2020).

These problems further tested the trust in cryptocurrencies and in their market intermediates. Vaz & Brown (2020) show that some (crypto)exchanges consider to provide custody services and the possibility to recover the (crypto)wallet key. This suggests also the need for a regulated intermediate structure for the cryptocurrencies markets (Vaz & Brown 2020) and it is further supported by Van Wegberg et al. (2018) who reveals that, ironically, mainstream cryptocurrency exchanges are lobbying to become regulated.

Cryptocurrencies and regulations

As indicated in the previous section, for cryptocurrencies (mainly those based on open blockchains) to become an accepted and good form of alternative money, the need to trust them in this capacity is critical. Furthermore, the market structure that appeared to allow the intermediation of cryptocurrencies needs also to be trusted. In both cases, the trust follows regulatory frameworks and institutional infrastructures that prevent, as much as possible, various risks – from protecting average, small users from the risk of value loss and allowing the reversibility of their transactions if necessary, to the obstruction of more serious criminal activities.

⁵ One can find the names of other, smaller, (crypto)exchanges or crypto-trading platforms that were victim of hacking in the studies of DeFilippi (2014), Cobert et al. (2019), Miciula (2019), and Feinstein & Werbach (2021).

The cryptocurrencies (mainly the permissionless ones) put a lot of challenges to the effort to include them into the existing regulatory framework since most of them lack a legal entity or person to be related to and even if such an entity/person exists, to establish its domicile is either impossible or very difficult (BIS 2018). Due to their decentralized nature, cryptocurrencies are borderless and nationless, being able to function outside the existing regulatory framework for the (traditional) financial institutions (Auer & Claessens 2020, BIS 2018, Cobert et al. 2019). What makes regulating cryptocurrencies even harder is the speed with which they evolve and appear, determining regulators to lag behind (Cobert et al. 2019). Therefore the debate is on about how effective the regulation at national level can be (Auer & Claessens 2020, Feinstein & Werbach 2021), highlighting how uneven the views regarding the nature and status of cryptocurrencies are (Cobert et al. 2019, Fletcher et al. 2020). Other studies suggest the need to create a regulatory system for cryptocurrencies that should be integrated, comprehensive and effective (Dumchikov et al. 2020, Morton 2020).

Currently, cryptocurrencies are, from a legal perspective, in a twilight zone (Van Wegberg et al. 2018) since they are neither banned nor regulated in many countries which chose to adopt the 'wait and see' attitude and, in most cases, only issuing warnings regarding the risks associated with the use for transactions and the possession of cryptocurrencies (Miciula & Kozojc 2019). However, some countries introduced regulations related to cryptocurrencies, while others choose to ban the use of cryptocurrencies either as medium of exchange and/or investment alternative and/or the mining activities. A selection of these countries is presented in Appendix 1.

Based on the cryptocurrencies' features, one can suppose that they are either out of the reach of national regulations or the influence of these country regulations is negligible. Nonetheless, some interesting findings come to light relating the price/capitalization and the transaction volume of cryptocurrencies with the regulatory actions in various countries as several studies showed. Cobert et al. (2019) mention mainly the important decrease in bitcoin price (about 50% in the early 2018) widely attributed to the concerted regulatory intentions of South Korea, Japan, and China. Borri & Shakhnov (2020) also show that the

restrictions imposed by China in 2017 (when initial coin offerings were banned) generate a decrease in trading volume in China and an increase of trading volume outside this country, mainly exchanging bitcoin versus the Korean won, Japanese yen and US dollar.

The study of Auer & Claessens (2020) indicates that the impact of regulations on the cryptocurrencies' prices and trading volume is influenced by the specific category to which it relates. Further, the findings of Auer & Claessens (2020) show that:

a) strong adverse effects on cryptocurrencies markets are related to news regarding regulations related to the general interdiction of cryptocurrencies to be used for (financial) transactions; these news are followed by those regarding the regulation of cryptocurrencies' treatment as securities; also important adverse effects are induced by the clear statements that cryptocurrencies will not be treated as fiat currencies;

b) adverse effects are linked to news about combating money laundering and prohibiting financing terrorism; this type of effects are also caused by regulations limiting the interoperability of cryptocurrencies with the regulated financial system;

c) no effects were detected when authorities issues general warnings (regarding the risks of using and/or possessing cryptocurrencies); also there are no effects when news appears regarding the possible issuance of a central bank digital currency (CBDC);

d) strong positive effects seem to be related to news that point toward possible novel regulatory framework favorable to the use of cryptocurrencies.

The study of Auer & Claessens (2020) is further confirmed by Shanaev et al. (2020) findings that anti-money laundering regulation announcements and the regulations on (initial) coin issues have significant effects on cryptocurrencies' prices, while the study also reports no significant effects when the general warnings regarding the risks associated with cryptocurrencies are issued. Similar findings are reported by Feinstein & Werbach (2021) when the prices are taken into consideration.

Nonetheless, when Feinstein & Werbach (2021) focus on cryptocurrencies (bitcoin and ethereum) trading volume - in fact on the authors consider the turnover - they find little evidence that the

announcements regarding regulatory actions induce abnormal trading volumes on crypto exchanges. Nonetheless, these results should be considered with caution since the same authors mention a high level of bitcoin concentration within a small number of accounts⁶ and therefore this concentration might have an important influence on turnover.

As studies of Brito et al. (2014) Auer & Claessens (2020) and Feinstein & Werbach (2021) show, the main areas on which the existing national regulations have the tendency to be concentrate are a) the anti-money laundering and the prevention of other criminal uses of cryptocurrencies and b) the protection of cryptocurrencies users. A third area of regulation is related to the taxation of the gains resulted from investing in or speculating the cryptocurrencies⁷. In all cases, the regulators are exploiting the need of cryptocurrencies to leave their parallel virtual world and to be exchanged versus fiat currencies for various purposes (Vaz & Brown 2020, Auer & Claessens 2020, BIS 2018). Therefore a series of regulations target the specialized intermediaries that allow the functioning of cryptocurrencies markets. As shown above, recently some of these intermediaries start lobbying to be regulated, as Van Wegberg et al. (2018) mentions, in order to increase the trust of their users. Furthermore, Auer & Claessens (2020) highlight the need to regulate the interoperability of cryptocurrencies with regulated financial institutions (commercial banks, credit card companies, various types of exchanges), since these entities are allowing most users to convert the cryptocurrencies in fiat/sovereign currencies and the rules how to deal with cryptocurrencies and related products (like derivatives and ETFs) are important. There is no doubt that cryptocurrencies markets rely to a certain extent on the regulated financial institutions to operate (Auer & Claessens 2020, Vaz & Brown 2020).

⁶ Kharif (2020) estimates that, for bitcoin, about 2% of the (crypto)exchange accounts are controlling about 95% of all bitcoin.

⁷ Morton (2020) mentions the creation the creation of the Joint Chiefs of Global Tax Enforcement (J5) which includes US, Australia, Canada, UK, and the Netherlands. This initiative tries to oppose the tax crimes related to cryptocurrencies.

Though, any relevant ground for regulating cryptocurrencies should first establish what these representations are⁸. More to the point, given their versatile and multi-faced nature, any definition of cryptocurrencies should consider them in all the already identified capacities: mean of payment and exchange, security, commodity, property, payment system, settlement mechanism. By including all these aspects the complexity of regulation will increase though it will also be inclusive. The need for a comprehensive legal definition and classification of cryptocurrencies is also stressed by Morton (2020).

As shown above, most of the present regulations are at national level, though most studies related to regulations on cryptocurrencies express concern regarding how effective these sovereign regulations are or will be. In most studies proposal are made regarding the need for a global regulation of cryptocurrencies mainly from financial viewpoint. This is a difficult goal to achieve since the characteristics of cryptocurrencies allow them to be highly elusive even if an agreement would be reach regarding the authority which should regulate and supervise the domain. Other voices consider that the regulation of cryptocurrencies should come from within their system, namely the private sector technology companies or an agreed upon organization ought regulate the domain (De Filippi 2014, Fletcher et al. 2020).

As the debate continues, a number of countries continue to regulate or have regulation in progress for cryptocurrencies and their markets at national level, while other continue to forbid the use of cryptocurrencies. Meanwhile the number of cryptocurrencies entering the market is growing at a rapid pace.

⁸ The difficulty to agree upon the status of cryptocurrencies is illustrated by the different views on bitcoin (which can be extended to cryptocurrencies in general) expressed by four regulatory bodies in US. Their views are the following, according to Fletcher et al. (2020) and Cobert et al. (2019): FinCEN (Financial Crime Enforcement Network) considers bitcoin to be a currency; CFTC (Commodity Futures Trading Commission) regards bitcoin as a commodity; SEC (Securities and Exchange Commission) sees bitcoin as a type of security; IRS (Internal Revenue Service) views bitcoin as a property for federal tax purposes.

Conclusions

The introduction of cryptocurrencies more than a decade ago brought into the main scene the blockchain technology and its potential benefits for the global financial system. This phenomenon also highlighted how powerful the integration between the IT and the financial sector can be(come).

When launched, the cryptocurrencies were intended as an alternative payment mechanism, without a central counterpart, which promised to be available at low-cost to any (informed) user. However, this intention was only partly confirmed by the subsequent evolution, cryptocurrencies becoming the payment of choice in a high number of illicit transactions during the second decade of the 21st century.

Furthermore, the relative high energy costs related to cryptocurrency mining of forging (depending on protocol) combined with the level of knowledge regarding cryptography generated a concentration of the mining sector in the hands of few. This situation also pushed the common/uninformed users to employ various intermediation services to reach the cryptocurrencies and therefore transmuting the initial intended use (payment mechanism) toward investment and/or speculative assets. This behavior generated market bubbles for several cryptocurrencies (mainly the dominant bitcoin) and therefore a high volatility in their respective prices. These circumstances also hindered the potential use of cryptocurrencies as medium of exchange, having an important impact mainly on the scalability of cryptocurrencies for small (day-to-day) transactions, but also on their potential role as unit of account and store of value.

The use of cryptocurrencies as 'good money' is additionally obstructed by the limited quantity of tokens/units available, most of the time imposed by the respective blockchain. The cryptocurrencies have a rigid offer which does not allow (in the absence of a central authority) a flexible adjustment to demand, creating further volatility. Forking was used as a solution, though the result in most cases weakened the much needed trust in means of payment. Other problems related to the limited quantity might be solved via the smallest denominations for the respective cryptocurrencies (e.g. bitcoin is denominated in 100,000,000

or 108 satoshi⁹, while ethereum is divided in 1,000,000,000,000,000,000 or 1018 wei¹⁰) though the restricted quantity can not be overlooked. Due to their limited quantity, cryptocurrencies were often compared with gold and one should not forget the negative influence played by the gold (bullion) standard which generated the same inflexible offer of money which could not adapt to the growing level of world trade flows and, consequently, becoming one of the causes for the Great Depression of 1929-1933.

Another problem, though seldom mentioned, is the very high number of reported cryptocurrencies (over 4,000 by the end of 2020). This number continues to grow and no one can say how many of the cryptocurrencies had only a meteoric existence. While the creators of cryptocurrencies follow their quest for success, this high number of cryptocurrencies can only generate further confusion among the existing and the potential users and might erode their trust since the quest for the next speculative asset 'winner' requires a substantial effort mainly related to information gathering. This situation can be assimilated with the medieval Europe and the high number of existing mints and the problems created by the intrinsic value of the minted coins (Redish & Weber 2011, Volckart 2018, Naismith 2018). One should not overlook the past experiences when the liberal issuance of private money almost always ended badly (BIS 2018, Fabris 2019).

An additional aspect that should be looked upon when the potential role as alternative money of cryptocurrencies is considered: the trust. Until the end of 2020, without the institutional support of fiat/traditional money, the existing trust (not measured yet to the best of authors' knowledge) in cryptocurrencies seems to arise mainly from their blockchain technologies, the alluring (pseudo)anonymity, and even more seductive idea of no government control. However, these tempting features do not cancel the fact that cryptocurrencies are no one's liabilities and can represent a complete loss for a number of reasons (from lost key/password to cyber-attacks). The risks for small, rather uniformed, users to place their money in cryptocurrencies no matter for what reasons, remain high and, in the end, have an impact on trust.

⁹ <https://www.investopedia.com/terms/s/satoshi.asp>

¹⁰ <https://www.investopedia.com/terms/w/wei.asp>

To reduce some of these risks, like the loss of investment assets, some crypto intermediaries started to act as counterparts and recognized the need for regulations. Though, this is not the norm yet within the cryptocurrencies environment.

Given the global dimension of cryptocurrencies phenomenon, the regulation process proves to be difficult. The attitude of governments around the world differ from prohibiting the use of cryptocurrencies within their borders and imposing a certain level of control on the Internet transactions, to the open attitude of some countries which introduced a regulating framework allowing the use of cryptocurrencies and their intermediaries, though not accepting - for now - the cryptocurrencies as legal tender. However, most of the countries around the world adopted the 'wait and see' attitude, not prohibiting the use of cryptocurrencies and allowing the banking institutions to offer various services related to cryptocurrencies, and issuing warnings related to the risks involved with the use of cryptocurrencies. Nonetheless, despite this 'wait and see' attitude most of these countries have anti-money laundering regulations and taxation regulations which include the use of cryptocurrencies mainly as investment assets.

Most studies and reports consider that the regulation of cryptocurrencies at national level might prove to be rather ineffective since the virtual currencies do not have a legal domicile and can 'travel' around the world in their parallel virtual universe. Nonetheless, the protection of numerous small and medium investors attracted by cryptocurrencies should not be discarded since, in the end, it will impact on their trust in these new virtual instruments.

Probably the best approach will be a dual one. The creators of cryptocurrencies should establish at least a set of good practices from within the IT community and create an association to deal with various specific problems. However, this situation might have impact on the liabilities and responsibilities these creators must assume; on the other hand, it might have a huge impact on users' trust.

From outside, the legal environment should create an inclusive legal definition of cryptocurrencies (which also might completely change their names) which should capture the multi-faced nature of these virtual currencies and their versatility. The legal definition would be the base for

further regulation since, in the end, cryptocurrencies should come into the traditional world to be exchanged either against fiat money and/or be transformed in material assets like real estate or various commodities. Therefore, the regulation of initial coin offerings (ICOs) and of various crypto intermediaries will be the normal step further, having in mind the potential small users/investors. Furthermore, the traditional financial institutions role as intermediaries for cryptocurrencies needs to be regulated since they are a 'crossing' between the cryptocurrencies environment and the traditional money settings. All these might use the already existing regulatory framework for traditional asset investments and can be done more easily at country level, though not impossible at international level if the supervisory institution can be agreed upon and subsequently established.

Nonetheless, how difficult a global regulation can be is shown currently by FOREX, the OTC market that exists for almost half a century and which is not regulated globally, despite BIS (Bank for International Settlements) efforts in this direction. Though, FOREX bases its architecture on well regulated national currency markets around the world.

Probably some of the existing cryptocurrencies are here to stay either as investment assets and/or medium of exchange. On the other hand, the blockchain technologies and their benefits can not be ignored and for sure will be used in the future. The governments and central banks are not ignoring these aspects and some countries announced their intention to test their respective central bank digital currency (CBDC). It is not clear now if and when a CBDC will be launched or it will be a completely different virtual representation. Nonetheless, the decades to come will see an increased interference between information technologies and financial products. It remains to be seen if they also can generate the needed trust to be used at global level or will remain a footnote to the history.

REFERENCES

- Aguilar, D., 2020, Myths and realities of Venezuela's crypto regulations, *Caracas Chronicles*, Nov. 5, available at:
<https://www.caracaschronicles.com/2020/11/05/myths-and-realities-of-venezuelas-crypto-regulations/>

- Almunia, M., Benetrix, A. S., Eichengreen, B., O'Rourke, K. H., Rua, G., 2009, From Great Depression to Great Credit Crisis: Similarities, differences and lessons. NBER Working Papers 15524, National Bureau of Economic Research, DOI 10.3386/w15524, available at: <https://www.nber.org/papers/w15524>
- Ammous, S., 2018, Can cryptocurrencies fulfill the functions of money?, *The Quarterly Review of Economics and Finance*, vol. 70, 38-51
- Athey, S., Parashkevov, I., Sarukkai, V., Xia, J., 2016, Bitcoin pricing, adoption, and usage: Theory and evidence, Working Paper no. 3469, Stanford Graduate School of Business, available at: <https://www.gsb.stanford.edu/faculty-research/working-papers/bitcoin-pricing-adoption-usage-theory-evidence>
- Auer, R., 2019, Beyond the doomsday economics of "proof-of-work" in cryptocurrencies, BIS Working Papers, No. 765, available at: <https://www.bis.org/publ/work765.pdf>
- Auer, R., Claessens, S., 2020, Cryptocurrency market reactions to regulatory news, Globalization Institute Working Paper 381, Federal Reserve Bank of Dallas, DOI: 10.24149/gwp381
- BIS (Bank of International Settlements), 2018, BIS Annual Economic Report – V. Cryptocurrencies: looking beyond the hype, available at: <https://www.bis.org/publ/arpdf/ar2018e5.htm>
- Brito, J., Castillo, A., 2013, Bitcoin: a primer for policymakers, Mercatus Center, George Mason University
- Brito, J., Shadab, H., Castillo, A., 2014, Bitcoin financial regulation: securities, derivatives, prediction markets, and gambling, *The Columbia Science & Technology Law Review*, 16 (1), 144-221, available at: <https://journals.library.columbia.edu/index.php/stlr/article/view/3992/1755>
- Borri, N., Shakhnov, K., 2020, Regulation spillover across cryptocurrency markets, *Finance Research Letters*, 36, 101333, DOI: 10.1016/j.frl.2019.101333
- Boshkov, T., 2019, Blockchain and digital currency in the world of finance, in Blockchain and cryptocurrencies, eds. Salman, A., Razzaq, G.A., IntechOpen, London, 23-40, DOI: 10.5772/intechopen.79456
- Bouri, E., Gupta, R., Vo, X.V., 2020, Jumps in geopolitical risk and the cryptocurrency market: The singularity of bitcoin, *Defence and Peace Economics*, published online 21 Nov. 2020, DOI: 10.1080/10242694.2020.1848285
- Bouveret, A., Haksar, V., 2018, What are cryptocurrencies?, *Finance & Development*, 55(2), 26-29, DOI: 10.5089/9781484357415.022
- Chiu, J., Koepl, T.V., 2019, The economics of cryptocurrencies: Bitcoin and beyond, Bank of Canada Staff Working Paper, No. 2019-40, Bank of Canada, Ottawa, available at: <https://www.econstor.eu/bitstream/10419/210780/1/1678115037.pdf>

- Cobert, S., Lucey, B., Urquhart, A., Yarovaya, L., 2019, Cryptocurrencies as a financial asset: a systematic analysis, *International Review of Financial Analysis*, 62, 182-199, DOI: 10.1016/j.irfa.2018.09.003
- De Filippi, P., 2014, Bitcoin: a regulatory nightmare to libertarian dream, *Internet Policy Review*, 3(2), pp.43, DOI: 10.14763/2014.2.286, available at: <https://policyreview.info/articles/analysis/bitcoin-regulatory-nightmare-libertarian-dream>
- Dimitrova, V., Fernandez-Martinez, M., Sanchez-Granero, M.A., Trinidad Segovia, J.E., 2019, Some comments on Bitcoin market (in)efficiency, *PloS ONE*, 14(7): e0219243, <https://doi.org/10.1371/journal.pone.0219243>
- Dumchikov, M., Kononenko, N., Batsenko, L., Halenin, R., Hlushchenko, N., 2020, Issues of regulating cryptocurrency and control over its turnover: international experience, *Amazonia Investiga*, 9(31), 10-20, DOI: 10.34069/AI/2020.31.07.1
- EBA, 2019, Report with advice for the European Commission on crypto-assets, European Banking Authority, available at: <https://www.eba.europa.eu/sites/default/documents/files/documents/10180/2545547/67493daa-85a8-4429-aa91-e9a5ed880684/EBA%20Report%20on%20crypto%20assets.pdf>
- Fabris, N., 2019, Cashless society – The future of money or a utopia?, *Journal of Central Banking Theory and Practice*, 8(1), 53-66, DOI: 10.2478/jcbtp-2019-0003
- Fanusie, Y.J., Robinson, T., 2018, Bitcoin Laundering: An Analysis of Illicit Flows into Digital Currency Services, Center on Sanctions & Illicit Finance, Foundation for Defense of Democracies, available at: <https://info.elliptic.co/whitepaper-fdd-bitcoin-laundering>
- FATF, 2014, Virtual currencies – Key definitions and potential AML/CFT risks, FATF (The Financial Action Task Force), Paris, available at: <https://www.fatf-gafi.org/media/fatf/documents/reports/Virtual-currency-key-definitions-and-potential-aml-cft-risks.pdf>
- Feinstein, B.D., Werbach, K., 2021, The impact of cryptocurrency regulation on trading markets, *Journal of Financial Regulation*, 7(1), 48-99, DOI: 10.1093/jfr/fjab003
- Fletcher, E., Larkin, C.J., Cobert, S., 2020, Cryptocurrency regulation: countering money laundering and terrorist financing, available at SSRN. DOI: 10.2139/ssrn.3704279
- Foley, S., Karlsen, J.R., Putnins, T.J., 2019, Sex, drugs and bitcoin: How much illegal activity is financed through cryptocurrencies?, *The Review of Financial Studies*, 32(5), 1798-1853. DOI: 10.1093/rfs/hhz015

- Frankenfield, J., 2021, Petro (PTR), <https://www.investopedia.com/terms/p/petro-cryptocurrency.asp>
- Glaser, F., Zimmermann, K., Haferkorn, M., Weber, M.C., Siering, M., 2014, Bitcoin – asset or currency? Revealing users' hidden intentions, ECIS 2014 (Tel Aviv), available at: <https://ssrn.com/abstract=2425247>
- Granot, E., 2019, On the origin of the value of cryptocurrencies, in Blockchain and cryptocurrencies, eds. Salman, A., Razzaq, G.A., IntechOpen, London, 75-94. DOI: 10.5772/intechopen.79451
- Gruber, S.M., 2013, Trust, identity, and disclosure: Are bitcoin exchanges the next virtual havens for money laundering and tax evasion? *Quinnipiac Law Review*, 32(1).
- Guo, X., Donev, P., 2020, Bibliometrics and network analysis of cryptocurrency research, *Journal of Systems Science and Complexity*, 33, 1933-1958, DOI: 10.1007/s11424-020-9094-z
- Hileman, G., Rauchs, M., 2017, Global cryptocurrency benchmarking study, Cambridge Centre for Alternative Finance, University of Cambridge, Judge School of Business, available at: <https://www.jbs.cam.ac.uk/faculty-research/centres/alternative-finance/publications/global-cryptocurrency/#.YNGGROgzaUk>
- Holub, M., Johnson, J., 2018, Bitcoin research across disciplines, *The Information Society*, 34(2), 144-126, DOI: 10.1080/01972243.2017.1414094
- Houben, R., Snyers, A., 2020, Cryptocurrencies and blockchain: legal context and implications for financial crime, money laundering and tax evasion, Directorate-General for Internal Policies of the Union, European Parliament, DOI: 10.2861/263175, available at: <https://www.europarl.europa.eu/cmsdata/150761/TAX3%20Study%20on%20cryptocurrencies%20and%20blockchain.pdf>
- Kharif, O., 2020, Bitcoin Whales' Ownership Concentration Is Rising During Rally, Bloomberg (Nov. 18, 2020), available at: <https://www.bloomberg.com/news/articles/2020-11-18/bitcoinwhales-ownership-concentration-is-rising-during-rally>
- Klein, M., Gross, J., Sander, P., 2020, The digital euro and the role of DLT for central bank digital currencies, FSBC Working Paper, Frankfurt School Blockchain Center, available at: http://explore-ip.com/2020_The-Digital-Euro-and-the-Role-of-DLT-for-Central-Bank-Digital-Currencies.pdf
- Lahajnar, S., Rozanec, A., 2020, The correlation strength of the most important cryptocurrencies in the bull and bear market, *International Management and Financial Innovation*, 17(3), 67-81, DOI: 10.21511/imfi.17(3).2020.06

- Lastra, R.M., Allen, J.G., 2018, Virtual currencies in the Eurosystem. Challenges ahead: in-depth analysis. Monetary dialogue July 2018, Directorate-General for Internal Policies of the Union, European Parliament, available at: https://www.europarl.europa.eu/cmsdata/150541/DIW_FINAL%20publication.pdf
- Lee, D.K.C., Teo, E.G.S., 2020, The new money: The utility of cryptocurrencies and the need for a monetary policy, available at SSRN, DOI: 10.2139/ssrn.3608752
- Liu, J., 2016, Bitcoin Literature: A Co-word Analysis. In Proceedings of the 6th Economic and Finance Conference 4206769, International Institute of Social and Economic Science, 262–272, DOI: 10.20472/EFC.2016.006.013
- Merediz-Sola, I., Bariviera, A.F., 2019, A bibliometric analysis of bitcoin scientific production, *Research in International Business and Finance*, 50, 294-305, DOI: 10.1016/j.ribaf.2019.06.008
- Miciula, I., 2019, The conditions of the cryptocurrency market and exchanges in Poland, in Blockchain and cryptocurrencies, eds. Salman, A., Razzaq, G.A., IntechOpen, London, 95-113, DOI: 10.5772/intechopen.79405
- Miciula, I., Kazojc, K., 2019, The global development of cryptocurrencies, *Research Papers of Wroclaw University of Economics*, 63(2), 184-196, DOI: 10.15611/pn.2019.2.16
- Morton, D.T., 2020, The future of cryptocurrency: an unregulated instrument in an increasingly regulated global economy, Loyola University Chicago, *International Law Review*, 16(1), 129-143, available at: <https://lawecommons.luc.edu/lucilr/vol16/iss1/8>
- Naismith, R., 2018, Introduction-chapter 1, in Money and coinage in the Middle Ages, Naismith, R. (ed), Brill, Boston, USA, 1-18, ISBN 978-90-04-38309-8 (e-book)
- Redish, A., Weber, W.E., 2011, A model of commodity money with minting and melting, Staff Report 460, Federal Reserve Bank of Minneapolis. Research Department, DOI: 10.21034/sr.460
- Scott, B., 2016, How can cryptocurrency and blockchain technology play a role in building social and solidarity finance?, UNRISD Working Paper WP 2016-1, available at: [https://www.unrisd.org/80256B3C005BCCF9/\(httpPublications\)/196AEF663B617144C1257F550057887C?OpenDocument](https://www.unrisd.org/80256B3C005BCCF9/(httpPublications)/196AEF663B617144C1257F550057887C?OpenDocument)
- Shanaev, S., Sharma, S., Ghimire, B., Shuraeva, A., 2020, Taming the blockchain beast? Regulatory implications for cryptocurrency market, *Research in International Business and Finance*, 51, 101080, DOI: 10.1016/j.ribaf.2019.101080

- Sobiecki, G., 2015, Regulating cryptocurrencies in Poland and in the world as exemplified by bitcoin – the legal status and economic assessment, *Problemy Zarządzania*, vol.13, no. 3(54), t.1, 144-163, DOI: 10.7172/1644-9584.54.10
- Stokes, R., 2012, Virtual money laundering: the case of bitcoin and the Linden dollar. *Information and Communications Technology Law*, 21(3), 221-236, DOI: 10.1080/13600834.2012.744225
- Stoll, C., Klaassen, L., Gallersdoerfer, U., 2019, The carbon footprint of bitcoin, *Joule*, 3(7), 1647-1661, DOI: 10.1016/j.joule.2019.05.012
- Tasca, P., Hayes, A., Liu, S., 2018, The evolution of the bitcoin economy: Extracting and analyzing the network of payment relationships, *Journal of Risk Finance*, 19(2), 94-126. DOI: 10.1108/JRF-03-2017-0059
- Van Alstyne, M., 2014, Why bitcoin has value, *Communications of the ACM*, 57(5), 30-32, available at: <https://cacm.acm.org/magazines/2014/5/174354-why-bitcoin-has-value/fulltext>
- Vaz, J., Brown, K., 2020, Money without institutions: how can cryptocurrencies be trusted?, paper presented at European Financial Management Association – 2020 Annual Meeting, available at: https://www.efmaefm.org/0EFMAMEETINGS/EFMA%20ANNUAL%20MEETINGS/2020-Dublin/papers/EFMA%202020_stage-1301_question-Full%20Paper_id-207.pdf
- Volckart, O., 2018, Technologies of money in the Middle Ages: The 'Principles of Minting', Economic History Working Papers no.275/2018, London School of Economics and Political Science, available at: <http://eprints.lse.ac.uk/87152/1/WP275.pdf>
- Van Wegberg, R., Oerlemans, J.-J., Van Deventer, O., 2018, Bitcoin money laundering: mixed results?: An explorative study on money laundering of cybercrime proceeds using bitcoin, *Journal of Financial Crime*, 25(2), 419-435, DOI: 10.1108/JFC-11-2016-0067
- Zhang, L., 2018, China: Government indicates all virtual currency platforms have withdrawn from market, The Law Library of Congress, available at: <https://www.loc.gov/law/foreign-news/article/china-government-indicates-all-virtual-currency-platforms-have-withdrawn-from-market/>

Appendix 1

While the list is far from being a comprehensive one, the selected countries included in this Appendix were confirmed from at least two sources regarding the regulatory status of cryptocurrencies.

1A: Countries where cryptocurrencies are banned

Country	Comments
Algeria	
Bangladesh	
Bolivia	
China	In China are banned: the exchange of crypto in fiat currencies; the ICO; the crypto exchanges and most recently the mining of cryptocurrencies which previously was not specifically forbidden.
Egypt	
Ecuador	Ecuador though permits cryptocurrency transactions via internet.
Iraq	
Kyrgyzstan	
Macedonia	
Morocco	
Namibia	
Nigeria	Introduced the ban relative recently 2019/2020.
Nepal	
Qatar	
Turkey	The banning of cryptocurrencies was introduced in April 2021

Note 1: There are also three countries which impose partial bans: Albania - bans the crypto to fiat currency exchange; Armenia - bans the crypto mining; Ghana – bans crypto to crypto exchanges.

Note 2: According to Zhang (2018), China was, before the introduction of various bans, the most active market for bitcoin; the exchange of bitcoin versus Chinese yuan accounted for an approximated 90% of global bitcoin trading.

Sources: Feinstein & Werbach (2021);

<https://www.loc.gov/law/help/cryptocurrency/cryptocurrency-world-survey.pdf>;

<https://www.finder.com/my/global-cryptocurrency-regulations>;

<https://www.mondaq.com/india/fin-tech/1044546/global-cryptocurrency-regulatory-landscape>; <https://www.coindesk.com/bolivia-crypto-ban>;

<https://kyc-chain.com/cryptocurrency-regulations-around-the-world/>;
<https://www.cnn.com/2018/03/27/a-complete-guide-to-cryptocurrency-regulations-around-the-world.html>;
<https://www.egypttoday.com/Article/3/100224/Egypt-s-central-bank-prohibits-issuing-cryptocurrencies-or-carrying-out>; <https://freemanlaw.com/ecuador-and-cryptocurrency/>;
<https://freemanlaw.com/iraq-and-cryptocurrency/>;
<https://freemanlaw.com/macedonia-and-cryptocurrency/>;
<https://www.coininsider.com/namibia-central-bank-bitcoin-illegal/>;
<https://www.dw.com/en/nigerias-cryptocurrency-crackdown-causes-confusion/a-56547374>; <https://www.securities.io/qatar-bans-all-cryptocurrency-in-qfc/>;
<https://www.euronews.com/2021/04/16/turkey-has-just-banned-the-use-of-cryptocurrencies-and-bitcoin-is-already-feeling-the-strain>

1B: Countries with no regulations or confusing regulations which perceive cryptocurrencies as having a (very) high risk

Country	Comments
Columbia	
Iceland	
India	It is expected that new regulations will be imposed and the banning of cryptocurrencies is viewed as almost certain.
Iran	The mining of cryptocurrencies is accepted, while the trading is banned.
Pakistan	Initially, Pakistan banned cryptocurrencies. However, recently the attitude change and the strict banning was relaxed.
Saudi Arabia	
Vietnam	

Sources: Feinstein & Werbach (2021);
<https://www.colombiafintech.co/novedades/colombia-is-slowly-moving-toward-bitcoin-friendly-regulations>; <https://freemanlaw.com/iceland-and-cryptocurrency/>;
<https://kyc-chain.com/cryptocurrency-regulations-around-the-world/>;
<https://www.coindesk.com/iran-central-bank-ban-trading-crypto-mined-abroad>;
<https://www.mondaq.com/india/fin-tech/1044546/global-cryptocurrency-regulatory-landscape>;
<https://www.coindesk.com/tag/saudi-arabia>;
<https://www.aseanbriefing.com/news/vietnam-to-start-regulating-cryptocurrencies/#:~:text=As%20of%20today%2C%20Vietnamese%20law,and%20banned%20for%20trade%20relationships>.

1C: Countries which regulated the cryptocurrencies

Country	Comments
Japan	Considered the most advanced country on what the cryptocurrency regulations are concerned.
Canada	Some sources mention Canada as the first country that established taxation regulations applying to cryptocurrencies
United States	Various regulatory bodies (see footnote 8, above) have different views regarding the cryptocurrencies. Though US attempts to adapt the existing regulations to cryptocurrency investments, mainly concerning initial coin offerings. However, some academic studies consider that without clear regulatory guidelines, blockchain start-ups rather prefer to avoid US given the potential implications of taxation regulations.
European Union (EU)	Work in progress. EU has issued the 5 th AML (anti-money laundering) Directive at the end of 2017. This regulation is considered one of the most significant concerning cryptocurrencies. The 5 th AML Directive is implemented gradually by the member states. The most advanced countries in complying with EU framework of 5 th AML Directive and regulating cryptocurrencies are: Estonia, Malta, Lithuania
Australia	Attempts to adapt the existing regulations to cryptocurrency phenomenon
Switzerland	Some studies consider that the country developed bespoke regulations in order to attract cryptocurrency related businesses
Singapore	Some studies consider that the country developed bespoke regulations in order to attract cryptocurrency related businesses
South Korea	Regulated mainly the crypto exchanges and accept cryptocurrencies related transactions only the identity of the trader/investor is revealed. Though initial coin offerings are banned, and also the privacy coins (e.g. Zcash, Monero)

Country	Comments
South Africa	Work in progress. This country is considered to have a 'sandbox' or flexible approach in regulating cryptocurrencies by trying not to restrict innovation in this field.
Bermuda	Issued bespoke regulation regarding cryptocurrencies since 2018.

Note 1: The countries in the list above mainly accept these virtual currencies to be used for various purchases; also there exist regulations concerning the crypto exchanges and, at certain level, the initial coin offerings might be regulated. In addition, these countries have regulations regarding the taxation of the gains resulted from cryptocurrency investments and/or transactions.

Note 2: Other countries with work in progress regarding cryptocurrencies might include: Bahrain, Belarus, Isle of Man, Mexico, Russia.

Sources: Feinstein & Werbach (2021); Morton 2020;

<https://www.internationallawoffice.com/Newsletters/Banking-Financial-Services/Bermuda/Carey-Olsen-Bermuda/Blockchain-and-cryptocurrency-regulation-2020>;

<https://www.loc.gov/law/help/cryptocurrency/cryptocurrency-world-survey.pdf>;

<https://www.finder.com/my/global-cryptocurrency-regulations>;

<https://www.loc.gov/law/foreign-news/article/russian-federation-new-bill-defines-cryptocurrency-proposes-tax-regulations/>;

<https://www.tamimi.com/law-update-articles/central-bank-of-bahrain-issues-regulations-governing-crypto-asset-services/>;

<https://kyc-chain.com/cryptocurrency-regulations-around-the-world/>

The case of Venezuela

The situation of Venezuela and its proposed cryptocurrency Petro must be mentioned.

Petro was proposed by Venezuela's government and launched in 2018 in an attempt to raise financial resources based on Venezuela's natural resources, given the country years long financial and economic crisis (with the national currency, bolivar, weakened by high inflation) and deepened by US sanctions.

Petro was received with mixed feelings and, in the end, failed to attract the needed financial resources.

Venezuela's president tried to enforce the use of Petro by Venezuelan corporations at the beginning of 2020 (see <https://www.coindesk.com/tag/petro>) but failed to obtain a result and Petro ledger was closed down for maintenance sometime during 2020 (Frankenfield, 2021).

Furthermore, there is still a debate if the virtual currency launched by Venezuela's government is really a cryptocurrency since its ledgers and nodes are under government control. The cryptocurrency community for sure do not see Petro as a 'classic' cryptocurrency.

The failure of Petro seems to be tacitly accepted by the Venezuela's government through the issuance of a regulation allowing bitcoin mining to become legal since September 2021 (Official Gazette No. 41,969), though the regulation regarding cryptocurrencies continues to have numerous gaps (Aguilar, 2020).